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Signed R. Mahoney

Dated 16 APR 2003

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Patents Form 1/77

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Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

1. Your reference

PF/5-70070P1

2. Patent application number
(The Patent Office will fill in this part)

0214116.6

19 JUN

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

SYNGENTA PARTICIPATIONS AG
Intellectual Property Department
Schwarzwaldallee 215
4058 Basel, SWITZERLAND

Patents ADP number *(if you know it)*

8029555001

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

ORGANIC COMPOUNDS

5. Name of your agent *(if you have one)*

Michael James RICKS

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

Syngenta Limited
Intellectual Property Department
Jealott's Hill Research Centre
PO Box 3538, BRACKNELL
Berkshire, RG42 6YA, UNITED KINGDOM

Patents ADP number *(if you know it)*

01282433003

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day / month / year)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

a) any applicant named in part 3 is not an inventor, or

b) there is an inventor who is not named as an applicant, or

c) any named applicant is a corporate body.

See note (d))

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form	
Description	77
Claim(s)	10
Abstract	–
Drawing(s)	

10. If you are also filing any of the following, state how many against each item.

Priority documents	
Translations of priority documents	
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	
Request for preliminary examination and search *(Patents Form 9/77)*	
Request for substantive examination *(Patents Form 10/77)*	
Any other documents *(please specify)*	

11. I/We request the grant of a patent on the basis of this application.

SYNGENTA PARTICIPATIONS AG

Signature Joanna Carmen Chandler Date 19/6/02.

Authorised Signatory

12. Name and daytime telephone number of person to contact in the United Kingdom

Joanna Carmen CHANDLER 01344 414079
Julie Anne BOWDICH 01344 414365

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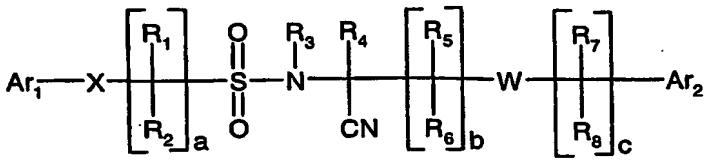
Organic Compounds

The present invention relates to novel α-sulfonylamino-acetonitrile derivatives of formula I. It further encompasses the preparation of the novel active compounds and to agrochemical compositions comprising at least one of these novel compounds as active ingredient. The invention further relates to the preparation of the said compositions and to the use of the compounds or of the compositions for controlling or preventing the infestation of plants by phytopathogenic microorganisms, especially fungi.

The α-sulfonylamino-acetonitrile derivatives according to the present invention correspond to the general formula I



(I)

including the optical isomers thereof and mixtures of such isomers, wherein

Ar_1 and Ar_2 independently of each other stand for an optionally substituted aryl or heteroaryl group,

R_1 and R_2 stand independently of each other for hydrogen, optionally substituted C_1-C_5alkyl, optionally substituted C_2-C_5alkenyl, C_2-C_5alkynyl or optionally substituted C_3–C_6cycloalkyl;

R_3 designates hydrogen, C_3-C_5alkenyl, C_3-C_5alkynyl or optionally substituted C_1-C_5alkyl;

R_4 is optionally substituted C_1-C_5alkyl, optionally substituted C_2-C_5alkenyl, C_2-C_5alkynyl or optionally substituted C_3–C_6cycloalkyl;

R_5 and R_6 are independently of each other hydrogen or optionally substituted C_1-C_5alkyl, optionally substituted C_2-C_5alkenyl, C_2-C_5alkynyl or optionally substituted C_3–C_6cycloalkyl;

R_7 and R_8 are independently of each other hydrogen or optionally substituted C_1-C_5alkyl, optionally substituted C_2-C_5alkenyl, C_2-C_5alkynyl or optionally substituted C_3–C_6cycloalkyl;

W designates a bridge selected from –O-, $-S(O)_m-$ or $-NR_3-$;

X designates a direct bond or a bridge selected from –O-, $-S(O)_m-$ or $-NR_3-$;

a and b independently of each other stand for a number 1, 2 or 3; and

c and m independently of each other stand for a number zero, 1 or 2.

More specifically the present invention refers to the α-sulfonylamino-acetonitrile derivatives

of formula I wherein

Ar_1 stands for an aryl group which is optionally substituted with n radicals independently selected from R_9 ; or
stands for a 5-ring-membered heteroaryl group comprising as ring members 1 to 4 heteroatoms selected from nitrogen, oxygen or sulfur and being optionally substituted with n radicals independently selected from R_{11} ; or
stands for a 6-ring-membered heteroaryl group comprising as ring members 1 to 4 heteroatoms selected from nitrogen, oxygen or sulfur and being optionally substituted with n radicals independently selected from R_{11} ;

Ar_2 stands for an aryl group which is optionally substituted with n radicals independently selected from R'_9 and from one radical R_{10}; or
stands for a 5-ring-membered heteroaryl group comprising as ring members 1 to 4 heteroatoms selected from nitrogen, oxygen or sulfur and being optionally substituted with n radicals independently selected from R_{11} ; or
stands for a 6-ring- membered heteroaryl group comprising as ring members 1 to 4 heteroatoms selected from nitrogen, oxygen or sulfur, and being optionally substituted with n radicals independently selected from R_{11} ; or
stands for a fused bicyclic heteroaryl group comprising as ring members 1 to 4 heteroatoms selected from nitrogen, oxygen or sulfur, and being composed from the 5-ring- or 6-ring-membered heteroaryl groups as defined for Ar_2 with an annellated phenyl ring or with an annellated second 6-ring-membered heteroaryl, each ring and the bicyclic heteroaryl being optionally substituted with n radicals independently selected from R_{11} ;

R_1 and R_2 stand independently of each other for hydrogen or C_1-C_5alkyl optionally substituted by halogen, C_1–C_3alkoxy or -$NR_{12}R_{13}$; or
stand for C_2-C_5alkenyl optionally substituted by halogen or C_1-C_3alkoxy; or
stand for C_2-C_5alkynyl; or
stand for C_3–C_6cycloalkyl optionally substituted by halogen, C_1-C_3alkoxy; C_1–C_3alkyl or -$NR_{12}R_{13}$;

R_3 designates hydrogen, C_3-C_5alkenyl, C_3-C_5alkynyl or C_1-C_3alkyl optionally substituted by C_1–C_3alkoxy; C_3-C_5alkenyloxy or C_3-C_5alkynyloxy;

R_4 is C_1-C_5-alkyl optionally substituted by halogen, C_1–C_3alkoxy or -$NR_{12}R_{13}$; or
is C_2-C_5alkenyl optionally substituted by halogen or C_1–C_3alkoxy; or
is C_2-C_5alkynyl; or
is C_3-C_6cycloalkyl optionally substituted by halogen, C_1–C_3alkoxy or C_1–C_3alkyl; or

R_5 and R_6 are independently of each other hydrogen or C_1-C_5alkyl optionally substituted by halogen, C_1–C_3alkoxy or -$NR_{12}R_{13}$; or
are C_2-C_5alkenyl optionally substituted by halogen or C_1-C_3alkoxy; or
are C_2-C_5alkynyl; or
are C_3–C_6cycloalkyl optionally substituted by halogen, C_1-C_3alkoxy; C_1–C_3alkyl or -$NR_{12}R_{13}$;

R_7 and R_8 are independently of each other hydrogen or C_1-C_5alkyl optionally substituted by halogen, C_1–C_3alkoxy or -$NR_{12}R_{13}$; or
are C_2-C_5alkenyl optionally substituted by halogen or C_1-C_3alkoxy; or
are C_2-C_5alkynyl; or
are C_3–C_6cycloalkyl optionally substituted by halogen, C_1-C_3alkoxy; C_1–C_3alkyl or -$NR_{12}R_{13}$;

R_9 and R'_9 independently of each other stand for C_1-C_5alkyl optionally substituted by halogen, C_1–C_4alkoxy, -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14}; by a -X-aryl which is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2, -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14}; by a -X-linked-5- or 6-ring-membered heteroaryl group optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2, -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14}; or
stand for C_3-C_6cycloalkyl, optionally substituted by halogen, hydroxy, =O, C_1-C_4alkoxy, $NR_{12}R_{13}$; or
stand for C_1–C_4alkoxy optionally substituted by halogen, C_1-C_4alkoxy, by -X-aryl which is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2, -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14}; by a X-linked-5- or 6-ring-membered heteroaryl group optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2, -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14}; or
stand for C_2-C_5alkenyl optionally substituted by halogen or aryl; or
stand for C_2-C_5alkynyl optionally substituted by halogen, tri-alkyl-silyl or aryl; or
stand for C_2-C_5alkenyloxy optionally substituted by halogen or aryl; or
stand for C_2-C_5alkynyloxy optionally substituted by halogen, tri-alkyl-silyl or aryl; or
stand for C_3-C_6cycloalkoxy optionally substituted by C_1-C_3alkyl, halogen or C_1-C_4alkoxy; or
stand for halogen; or
stand for -$NR_{12}R_{13}$, or
stand for –NR_2-CO-R_{12}; or
stand for –NR_2-CO-OR_{12}; or

stand for -NR_2-CO-NR_8R_9 ; or

stand for -NR_2-CO-SR_{12} ; or

stand for –NR_2-CS-OR_{12} ; or

stand for -NR_2-CS-NR_8R_9 ; or

stand for -NR_2-CS-SR_{12} ; or

stand for –NR_2-C(=N-O-R_{12})-S-OR_{12} ; or

stand for -NR_2-C(=N-O-R_{12})-NR_8R_9 ; or

stand for -NR_2-C(=N-O-R_{12})-SR_{12} ; or

stand for -$S(O)_p$-C_1-C_4alkyl optionally substituted by halogen; or

stand for -NR_2-SO_2-NR_8R_9 ; or

stand for nitro , for cyano or for –CS-NH_2;

R_{10} stands for hydrogen; or

stands for -X-aryl which is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, -CN, -NO_2 , -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14} ; or

stands for a X-linked 5-membered aromatic or non-aromatic heterocyclic ring comprising nitrogen, oxygen or sulfur as ring members and being optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2 , -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14} ; or

stands for a X-linked 6-membered aromatic or non-aromatic heterocyclic ring comprising nitrogen, oxygen or sulfur as ring members and being optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2 , -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14} ; or

stands for -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14} ; or

stands for -O-CO-R_{14} ; or

stands for –C(=N-O-R_{12})-R_{14} ;

R_{10} and one R'_9 together form a 3- or 4-membered non-aromatic bridge forming an annellated ring which may contain a carbonyl function or nitrogen, oxygen or sulfur as ring members and is optionally substituted by C_1-C_3alkyl;

R_{11} is hydrogen, halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -$NR_{12}R_{13}$, -NO_2, -CN, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14} ;

W designates a bridge selected from –O-, -$S(O)_m$- or -NR_3- ;

X designates a direct bond or a bridge selected from –O-, -$S(O)_m$- or -NR_3- ;

a stands for a number 1, 2 or 3;

b stands for a number 1, 2 or 3;

c stands for a number zero, 1 or 2;

m stands for a number zero, 1 or 2;

n stands for a number 1 or 2;

p stands for a number zero, 1 or 2;

R_{12} and R_{13} independently of each other stand for hydrogen; C_1–C_5alkyl optionally substituted by halogen, C_1-C_4haloalkyl, C_1–C_4alkoxy, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino, or aryl which in turn is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy or -CN ; or

stand for C_3–C_5alkenyl optionally substituted by halogen, C_1-C_4haloalkyl, C_1–C_4alkoxy, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino, or aryl which in turn is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy or -CN; or

stand for C_3–C_5alkynyl optionally substituted by halogen, C_1-C_4haloalkyl, C_1–C_4alkoxy, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino, or aryl which in turn is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy or -CN; or

together form a 5-ring-membered non-aromatic carbocyclic ring; or together form a 6-ring-membered non-aromatic carbocyclic ring which is interrupted by –O- or –N(C_1-C_4alkyl)- ;

R_{14} stands for C_1-C_5alkyl optionally substituted by halogen, C_1–C_4alkoxy, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino; aryl which in turn is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino or C_1-C_4alkylcarbonyl, C_1-C_4alkoxycarbonyl, C_1-C_4alkylaminocarbonyl or di(C_1-C_4alkyl)aminocarbonyl; or by a 5- or 6-ring hetero-aromatic ring which in turn is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl C_1–C_4alkoxy, -CN, -NO_2, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino, C_1-C_4alkylcarbonyl, C_1-C_4alkoxycarbonyl, C_1-C_4alkylaminocarbonyl or di-(C_1-C_4alkyl)aminocarbonyl; or

stands for C_3-C_6cycloalkyl optionally substituted by halogen, hydroxy, =O, C_1–C_4alkoxy or C_1-C_4alkylamino, di(C_1-C_4alkyl)amino; or

stands for C_1–C_4alkoxy optionally substituted by halogen, C_1–C_4alkoxy; C_1-C_4alkylamino, di(C_1-C_4alkyl)amino; or

stands for phenyl which is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, -CN, -NO_2, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino, C_1-C_4alkylcarbonyl, C_1-C_4alkoxycarbonyl, C_1-C_4alkylaminocarbonyl or di-(C_1-C_4alkyl)aminocarbonyl; or

stands for a 5- or 6-ring membered heteroaryl comprising nitrogen, oxygen or sulfur as ring members and being optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl;

C_1-C_4alkoxy, -CN, -NO_2, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino, C_1-C_4alkylcarbonyl, C_1-C_4alkoxycarbonyl, C_1-C_4alkylaminocarbonyl or di-(C_1-C_4alkyl)aminocarbonyl.

In the above definitions "halo" or "halogen" includes fluorine, chlorine, bromine and iodine. The alkyl, alkenyl and alkynyl radicals may be straight-chain or branched. This applies also to the alkyl, alkenyl or alkynyl parts of other alkyl-, alkenyl- or alkynyl-containing groups, such as alkoxy, alkylthio, alkylamino and dialkylamino.

Depending upon the number of carbon atoms mentioned, alkyl on its own or as part of another substituent is to be understood as being, for example, methyl, ethyl, propyl, butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl and the isomers thereof, for example isopropyl, isobutyl, tert-butyl or sec-butyl, isopentyl or tert-pentyl.

Cycloalkyl for example is, depending upon the number of carbon atoms mentioned, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, bicyclohexyl, cycloheptyl, bicycloheptyl, cyclooctyl or bicyclooctyl.

Depending upon the number of carbon atoms mentioned, alkenyl as a group or as a structural element of other groups is to be understood as being, for example, ethenyl, allyl, 1-propenyl, buten-2-yl, buten-3-yl, penten-1-yl, penten-3-yl, hexen-1-yl, 4-methyl-3-pentenyl or 4-methyl-3-hexenyl.

Alkynyl as a group or as a structural element of other groups is, for example, ethynyl, propyn-1-yl, propyn-2-yl, butyn-1-yl, butyn-2-yl, 1-methyl-2-butynyl, hexyn-1-yl, 1-ethyl-2-butynyl or octyn-1-yl, depending on the number of carbon atoms present.

A haloalkyl, haloalkenyl, haloalkynyl or halocycloalkyl group may contain one or more (identical or different) halogen atoms, and for example may stand for $CHCl_2$, CH_2F, CCl_3, CH_2Cl, CHF_2, CF_3, CH_2CH_2Br, C_2Cl_5, CH_2Br, $CHClBr$, CF_3CH_2, CH_2CH_2Cl, CH_2CH_2F, CH_2CHF_2, CH_2-C=$CHCl$, CH=CCl_2, CH=CF_2, CH_2-C≡CCl, CH_2-C≡C-CF_3, chlorocyclohexyl, dichlorocyclohexyl, etc.

Alkoxy thus includes methoxy, ethoxy, propoxy, isopropoxy, n-butyloxy, s-butyloxy, i-butyloxy or t-butyloxy.

Ar_1 and Ar_2 according to the present invention both present aromatic moieties, belonging to the chemical class of aromatic hydrocarbons or aromatic heterocycles, designated as aryl or heteroaryl.

The definition aryl includes aromatic hydrocarbon ring systems like phenyl, naphthyl, anthracenyl, phenanthrenyl and biphenyl like 1,3-biphenyl and 1,4-biphenyl, with phenyl being preferred. The same definition applies where aryl is part of aryloxy.

Heteroaryl stands for monocyclic aromatic ring systems comprising 1 to 4 heteroatoms selected from N, O and S, where it is understood that the for reasons of complying with the aromatic character of the heteroaryl rings 1 to 4 nitrogen atoms may be present in one ring, but in general not more than one of them may be replaced by oxygen or sulfur. However for the purposes of defining Ar_2 heteroaryl includes bicyclic aromatic ring systems comprising an aromatic 5- to 6-membered ring heterocycle condensed with another aromatic 6-membered ring, either an heterocycle or a benzene ring. Where condensed ring systems of more than one ring is intended this is especially pointed out, for example by mentioning condensation, including annellation with benzene rings

Typical examples for 5-rings, 6-rings and bicyclic condensed systems are furyl, thienyl, pyrrolyl, imidazolyl, pyrazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, oxadiazolyl, thiadiazolyl, triazolyl, tetrazolyl, pyridyl, pyridazinyl, pyrimidinyl, pyrazinyl, triazinyl, tetrazinyl, indolyl, benzothienyl, benzofuryl, isobenzothienyl, isobenzofuryl, benzimidazolyl, benzopyrazolyl, indazolyl, benzotriazolyl, benzothiazolyl, benzoisothiazolyl, benzoxazolyl, benzisoxazolyl, quinolinyl, isoquinolinyl, phthalazinyl, purinyl, naphthridinyl, pteridinyl, quinoxalinyl, quinazolinyl and cinnolinyl. Preferred heterocycles are furyl, thienyl, pyrrolyl, imidazolyl, thiazolyl, oxazolyl, isoxazolyl, oxadiazolyl, thiadiazolyl, triazolyl, pyridyl, pyridazinyl, pyrimidinyl, pyrazinyl, indolyl, benzothienyl, benzofuryl, benzopyrazolyl, benzothiazolyl, benzoxazolyl, benzisoxazolyl, quinolinyl, isoquinolinyl and quinazolinyl.

Depending on the position of the heteroaryl group, the heterocyclic ring may be linked to the basic molecular structure via a ring-carbon atom or via a nitrogen-ring atom.

The aryl and heteroaryl groups according to the invention may be unsubstituted or are optionally substituted. Where substituents are indicated according to this invention, the ring structures may carry one or more identical or different substituents. Normally not more than three substituents are present at the same time. Examples of substituents of aryl or heteroaryl groups are: alkyl, alkenyl, alkynyl, cycloalkyl, alkylamino, dialkylamino, cyano, nitro, amino, hydroxy, cycloalkyl-alkyl, aryl, arylalkyl, heteroaryl, heteroaryl-alkyl, phenyl and phenyl-alkyl, it being possible in turn for all of the preceding groups to carry one or more identical or different halogen atoms; alkoxy; alkenyloxy; alkynyloxy; alkoxyalkyl; haloalkoxy, alkylthio; haloalkylthio; alkylsulfonyl; formyl; alkanoyl; hydroxy; halogen; cyano; nitro; amino; hydroxy, alkylamino; dialkylamino; carboxyl; alkoxycarbonyl; alkenyloxycarbonyl; or alkynyloxycarbonyl.

Typical examples include 1-naphthyl, 2,3-dichlorophenyl, 2,3-difluorophenyl, 2,4,6-trichlorophenyl, 2,4,6-trifluorophenyl, 2,4-dichlorophenyl, 2,4-difluorophenyl, 2,5-dichlorophenyl,

2,5-difluorophenyl, 2,6-dichlorophenyl, 2-chloro-4-ethoxyphenyl, 2-chloro-4-methoxyphenyl, 2-chlorophenyl, 2-ethoxyphenyl, 2-fluoro-4-chlorophenyl, 2-fluoro-4-ethoxyphenyl, 2-fluoro-4-methoxyphenyl, 2-hexyloxyphenyl, 2-methoxy-4-chlorophenyl, 2-methoxyphenyl, 2-methyl-4-chlorophenyl, 2-naphthyl, 2-trifluoromethyl, 3,4,5-trichlorophenyl, 3,4-dibromophenyl, 3,4-dichlorophenyl, 3,4-difluorophenyl, 3,4-dimethoxyphenyl, 3,4-dimethylphenyl, 3,5-dimethyl-4-chlorophenyl, 3'4'-dichloro-4-biphenylyl, 3-bromo-4-methylphenyl, 3-bromophenyl, 3-chloro-4-cyanophenyl, 3-chloro-4-ethoxyphenyl, 3-chloro-4-fluorophenyl, 3-chloro-4-methoxyphenyl, 3-chlorophenyl, 3-ethyl-4-chlorophenyl, 3-fluoro-4-ethoxyphenyl, 3-fluoro-4-methoxyphenyl, 3-fluoro-4-methoxyphenyl, 3-methoxy-4-chlorophenyl, 3-methylphenyl, 4-(1,3,4-oxadiazol-2-yl)phenyl, 4-(1-imidazolyl)-phenyl, 4-(1-methyl-methoximinomethyl)-phenyl, 4-(2,6-dimethoxy-pyrimidin-2-ylthio)-phenyl, 4-(2-cyanopyrid-4-yl)-phenyl, 4-(3-methyl-1,2,4-thiadiazol-4-2-yloxy)phenyl, 4-(3-methyl-1,2,4-thiazol-5-yloxy)-phenyl, 4-(5-ethyl-1,3,4-oxadiazol-2-yl)phenyl, 4-(pyrid-2yloxy)-phenyl, 4'-bromo-4-biphenylyl, 4'-chloro-4-biphenylyl, 4'-cyano-4-biphenylyl, 4'-methyl-4-biphenylyl, 4'-trifluoromethyl-4-biphenylyl, 4-aminocarbonylethoxy-phenyl, 4-aminocarbonylmethylphenyl, 4-aminocarbonyl-phenyl, 4-biphenylyl, 4-bromo-3-chlorophenyl, 4-bromophenyl, 4-chloro-3-cyanophenyl, 4-chloro-3-fluorophenyl, 4-chloro-3-methylphenyl, 4-chloro-3-trifluoromethyl-phenyl, 4-chlorophenyl, 4-cyanophenyl, 4-cyclohexylphenyl, 4-ethenylphenyl, 4-ethoxyphenyl, 4-ethylphenyl, 4-ethynyloxyphenyl, 4-ethynylphenyl, 4-fluorophenyl, 4-hexyloxyphenyl, 4-isopropylcarbonylamino-phenyl, 4-isopropylphenyl, 4-isopropoxyphenyl, 4-methoxy-3-methylphenyl, 4-methoxycarbonyl-phenyl, 4-methoxyphenyl, 4-methylphenyl, 4-methylsulfonyl-phenyl, 4-methylthiophenyl, 4-nitrophenyl, 4-N-morpholinocarbonylaminophenyl, 4-N-morpholinocarbonyloxyethoxy-phenyl, 4-phenoxyphenyl, 4-propargyloxyphenyl, 4-propylphenyl, 4-tert.-butylcarbonylamino-phenyl, 4-tert.butylphenyl, 4-trifluoromethoxyphenyl, 4-trifluoromethylphenyl, 5-chloro-thien-2-yl, 5-methyl-fur-2-yl, 5-methyl-thien-2-yl, 6-benzothienyl, 7-benzothienyl, etc.

Where R_{10} and R'_9 together form a bridge the bridge is normally between vicinal carbon atom of Ar_2. Thus annellated ring structures are formed, which may be substituted with one or two lower alkyl groups, preferably methyl. The bridge includes $-(CH_2)_3-$, $-(CH_2)_4-$, $-O-(CH_2)_3-$, $-CO-(CH_2)_3-$, $-S-(CH_2)_3-$, $-NH-(CH_2)_3-$, $-O-(CH_2)_2-$, $-O-(CH_2)_2-O-$, $-O-CH_2-CH(CH_3)-O-$, $-O-CH_2-O-$, $-CO-(CH_2)_2-$, $-S-(CH_2)_2-$, $-NH-(CH_2)_2-$, $-CH_2-O-CH_2-$, $-CH_2-CO-CH_2-$, $-CH_2-S-CH_2-$, $-CH_2-NH-CH_2-$, $-CO-O-(CH_2)_2-$, $-CO-NH-(CH_2)_2-$, $-NH-CO-(CH_2)_2-$, $-CH_2-CO-O-CH_2-$, $-CO-S-(CH_2)_2-$, $-NH-CO-CH_2-$, $-O-CO-(CH_2)_2-$, $-CH_2-CO-O-$, $-CH_2-O-CO-$, $-S-CO-(CH_2)_2-$, $-CO-NH-CH_2-$ and $-CH_2-CO-NH-CH_2-$, etc..

Where the acetals or ketals of -CO-R_{14} are intended the acetals and ketals may appear as -C(C_1-C_4alkoxy)$_2$-R_{14} or as cyclic structures wherein the former carbonyl carbon atom carries a dioxoalkylene bridge of the type --O-C_1-C_3alkylene-O- which optionally may be branched, including -O-CH_2-O- , -O-CH(CH_3)-O- , -O-(CH_2)$_2$-O- , -O-(CH_2)$_3$-O- , -O-CH_2-CH(CH_3)-O- , and the like.

Where R_{12} and R_{13} together with the nitrogen binding the two radicals may form a non-aromatic carbocyclic ring this radical stands for pyrrolidine, piperidine, morpholine or thiomorpholine ring, which may be substituted by one or two methyl groups.

The presence of at least one asymmetric carbon atom in the compounds of formula I means that the compounds may occur in optically isomeric , diastereomeric and enantiomeric forms. As a result of the presence of a possible aliphatic C=C double bond, geometric isomerism may also occur. Formula I is intended to include all those possible isomeric forms and mixtures thereof. Where no specific isomer is specified the mixtures of diastereomers , enantiomers or the racemate are meant, as obtainable from the disclosed synthesis methods. The optical isomers, diastereomers and enantiomers of formula I may be obtained in pure form either by isolation from the mixture by suitable separation methods, which are known in the art, or may be obtained by stereoselective synthesis methods.

Preferred subgroups of compounds of formula I are those wherein

Ar_1 stands for optionally substituted aryl group; or

Ar_1 is optionally substituted phenyl; or

Ar_2 stands for optionally substituted aryl; or

Ar_2 is optionally substituted phenyl; or

Ar_1 and Ar_2 independently of each other stand for optionally substituted phenyl; or

the optional substituents R_9 of Ar_1 are preferably selected from the group comprising halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_3-C_6cycloalkyl, -CN and -CO-R_{14}; or

the optional substituents R'_9 of Ar_2 are preferably selected from the group comprising halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_3-C_6cycloalkyl, -CN, -CO-R_{14} , -$NR_{12}R_{13}$, -NR_2-CO-R_{12}, –NR_3-CO-OR_{12} , -NR_2-CO-NR_8R_9 , -NR_2-CO-SR_{12} , -NR_2-CS-OR_{12} , -NR_2-CS-NR_8R_9 , -NR_2-CS-SR_{12} , -S(O)$_p$-C_1-C_4alkyl , -S(O)$_p$-C_1-C_4haloalkyl , -NR_2-SO_2-NR_8R_9, nitro , cyano and -CS-NH_2; or

the optional substituents R_9 and R'_9 of Ar_1 and Ar_2 are selected from the group

comprising C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy and C_3-C_6cycloalkyl; or

the optional substituents R_9 and R'_9 of Ar_1 and Ar_2 are selected from the group comprising bromo, chloro, fluoro, iodo, cyano, hydroxy, amino, nitro, methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, allyloxy, propargyloxy, benzyloxy, trifluoromethyl, trifluoromethoxy, 2-cyano-2-methyl-butyloxy, methylsulfonyl, methylsulfinyl, methylthio, cyclopentyl, cyclohexyl, aminocarbonylmethyl, methoximinoethyl, aminocarbonyl, butylcarbonylamino, tert-butylcarbonylamino, triazol-1-ylmethyl, 1,2,4-triazol-1-ylmethyl, N-morpholinocarbonylamino, aminocarbonyloxy-ethoxy, morpholinocarbonyloxyethoxy and cyanopyridyloxyethoxy; or

the optional substituents R_9 and R'_9 of Ar_1 and Ar_2 are selected from the group comprising bromo, chloro, fluoro, methyl, ethyl, methoxy, ethoxy, trifluoromethyl and trifluoromethoxy; or

the optional substituent R_{10} on Ar_2 is selected from optionally substituted phenyl, optionally substituted imidazolyl, optionally substituted thiazolyloxy, optionally substituted pyridyloxy, optionally substituted pyridyl, optionally substituted pyrimidinyloxy, optionally substituted pyrimidinyl, optionally substituted oxadiazolyl, optionally substituted triazolyl, optionally substituted pyrazolyl, optionally substituted oxadiazolyloxy, optionally substituted triazolyloxy and optionally substituted pyrazolyloxy; or

the optional substituent R_{10} on Ar_2 is selected from halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, -CN, $-NO_2$, $-NR_{12}R_{13}$, $-CO-R_{14}$ and the acyclic or cyclic ketals and acetals of $-CO-R_{14}$; or

the optional substituent R_{10} on Ar_2 is selected from $-CO-R_{14}$, $-O-CO-R_{14}$, optionally substituted phenyl, optionally substituted phenoxy, optionally substituted imidazolyl, optionally substituted imidazolyloxy, optionally substituted thiazolyloxy, optionally substituted thiazolyl, optionally substituted thiadiazolyloxy, optionally substituted thiadiazolyl, optionally substituted pyridyloxy, optionally substituted pyridyl, optionally substituted pyrimidinyloxy, optionally substituted pyrimidinyl, optionally substituted oxadiazolyl, optionally substituted oxadiazolyloxy, optionally substituted triazolyl, optionally substituted pyrazolyl, optionally substituted triazolyloxy and optionally substituted pyrazolyloxy; or

the optional substituent R_{10} on Ar_2 is selected from $-CO-C_1$-C_4alkyl , $-O-CO-C_1$-C_4alkyl and $-CO-C_1$-C_4alkoxy ; or

the optional substituent R_{10} on Ar_2 is selected from aminocarbonyl, dimethylaminocarbonyl, acetyl, propionyl, acetoxy, methoxycarbonyl, ethoxycarbonyl, benzoyl, methoximinoethyl, 1-imidazolyl, 5-(3-methyl-1,2,4-thiadiazolyloxy), 2-pyridyl, 2-pyridyloxy, 4-pyrimidi-

nyl, 2-(3,5-dichloropyridyloxy), 2-(4,6-dichloropyridyloxy), 2-(4,6-dimethoxypyrimidinylthio), 2-oxadiazolyl, 2-(5-methyl-oxadazolyl), 2-(5-ethyl-oxadiazolyl), 1-triazolyl, 1-pyrazolyl, 1-(3,4-dimethylpyrazolyl), 4-(2-methylthiazolyl), 2-(1,3,4-oxydiazolyl), N-pyrrolidin-2-onyl, and 2-quinoxalinyl, or

R_1, R_2, R_5, R_6, R_7 and R_8 independently of each other stand for hydrogen or methyl; or

R_1 and R_5 are independently of each other C_1-C_4alkyl and R_2 and R_6 are hydrogen; or

R_3 is hydrogen or C_1-C_4alkyl optionally substituted with C_1-C_4alkoxy, C_3-C_4alkenyloxy, or C_3-C_4alkynyloxy; or

R_3 is hydrogen, C_1-C_4alkyl or C_1-C_4alkoxy-C_1-C_4alkyl; or

R_4 is hydrogen or C_1-C_4alkyl optionally substituted with halogen, C_1-C_3alkoxy , C_1-C_3alkylamino or di-C_1-C_3alkylamino; or

R_4 is hydrogen, C_1-C_4alkyl or C_1-C_4haloalkyl or

R_4 is C_1-C_4alkyl or C_1-C_4haloalkyl; or

W is –O- ; or

X is a direct bond; or

the suffixes (a) and (b) designate the number 1 ; or

the suffix (c) stands for the number zero.

One preferred subgroup of formula I is wherein Ar_1 and Ar_2 independently of each other stand for optionally substituted phenyl; and the optional substituents R_9 of Ar_1 are preferably selected from the group comprising halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_3-C_6cycloalkyl, -CN and -CO-R_{14}; and the optional substituents R'_9 of Ar_2 are preferably selected from the group comprising halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_3-C_6cycloalkyl, -CN, -CO-R_{14} , -$NR_{12}R_{13}$, -NR_2-CO-R_{12}, -NR_3-CO-OR_{12} , -NR_2-CO-NR_8R_9 , -NR_2-CO-SR_{12} , -NR_2-CS-OR_{12} , -NR_2-CS-NR_8R_9 , -NR_2-CS-SR_{12} , -$S(O)_p$-C_1-C_4alkyl , -$S(O)_p$-C_1-C_4haloalkyl , -NR_2-SO_2-NR_8R_9 , nitro , cyano and -CS-NH_2; and the optional substituent R_{10} on Ar_2 is selected from optionally substituted phenyl, optionally substituted imidazolyl, optionally substituted thiazolyloxy, optionally substituted pyridyloxy, optionally substituted pyridyl, optionally substituted pyrimidinyloxy, optionally substituted pyrimidinyl, optionally substituted oxadiazolyl, optionally substituted triazolyl, optionally substituted pyrazolyl, optionally substituted oxadiazolyloxy, optionally substituted triazolyloxy and optionally substituted pyrazolyloxy.

Further preferred subgroups are those wherein

A) Ar_1 and Ar_2 independently stand for optionally substituted aryl groups; and

the optional substituents R_9 of Ar_1 are preferably selected from the group comprising halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_3-C_6cycloalkyl, -CN and -CO-R_{14}; and

the optional substituents R'_9 of Ar_2 are preferably selected from the group comprising halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_3-C_6cycloalkyl, -CN, -CO-R_{14} , -$NR_{12}R_{13}$, -NR_2-CO-R_{12}, –NR_3-CO-OR_{12} , -NR_2-CO-NR_8R_9 , -NR_2-CO-SR_{12} , -NR_2-CS-OR_{12} , -NR_2-CS-NR_8R_9 , -NR_2-CS-SR_{12} , -$S(O)_p$-C_1-C_4alkyl , -$S(O)_p$-C_1-C_4haloalkyl , -NR_2-SO_2-NR_8R_9 , nitro , cyano and -CS-NH_2; and

the optional substituent R_{10} on Ar_2 is selected from halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, -CN, -NO_2 , -$NR_{12}R_{13}$, -CO-R_{14} and the acyclic or cyclic ketals and acetals of -CO-R_{14} ; -O–CO-R_{14} , optionally substituted phenyl, optionally substituted imidazolyl, optionally substituted thiazolyloxy, optionally substituted pyridyloxy, optionally substituted pyridyl, optionally substituted pyrimidinyloxy, optionally substituted pyrimidinyl, optionally substituted oxadiazolyl, optionally substituted triazolyl, optionally substituted pyrazolyl, optionally substituted oxadiazolyloxy, optionally substituted triazolyloxy and optionally substituted pyrazolyloxy; and

R_1, R_2, R_5, R_6, R_7 and R_8 independently of each other are hydrogen or methyl; and

R_3 is hydrogen or C_1-C_4alkyl optionally substituted with C_1-C_4alkoxy, C_3-C_4alkenyloxy, or C_3-C_4alkynyloxy; and

R_4 is hydrogen or C_1-C_4alkyl optionally substituted with halogen, C_1-C_3alkoxy , C_1-C_3alkylamino or di-C_1-C_3alkylamino; and

W is –O- ; and

X is a direct bond; and

the suffixes (a) and (b) designate the number 1 ; and

the suffix (c) stands for the number zero; or wherein

B) Ar_1 and Ar_2 independently of each other stand for optionally substituted phenyl; and

the optional substituents R_9 and R'_9 of Ar_1 and Ar_2 are selected from the group comprising C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy and C_3-C_6cycloalkyl; and

the optional substituent R_{10} on Ar_2 is selected from –CO-C_1-C_4alkyl , –CO-C_1-C_4alkoxy, -O-CO-C_1-C_4alkyl, optionally substituted phenyl, optionally substituted phenoxy, optionally substituted imidazolyl, optionally substituted imidazolyloxy, optionally substituted thiazolyloxy, optionally substituted thiazolyl, optionally substituted thiadiazolyloxy, optionally substituted thiadiazolyl, optionally substituted pyridyloxy, optionally substituted pyridyl, optionally

substituted pyrimidinyloxy, optionally substituted pyrimidinyl, optionally substituted oxadiazolyl, optionally substituted oxadiazolyloxy, optionally substituted triazolyl, optionally substituted pyrazolyl, optionally substituted triazolyloxy and optionally substituted pyrazolyloxy; and

R_1 and R_5 are independently C_1-C_4alkyl and R_2 and R_6 are hydrogen; and

R_3 is hydrogen, C_1-C_4alkyl or C_1-C_4alkoxy-C_1-C_4alkyl; and

R_4 is C_1-C_4alkyl or C_1-C_4haloalkyl; and

W is –O- ; and

X is a direct bond; and

the suffixes (a) and (b) designate the number 1 ; and

the suffix (c) stands for the number zero; or wherein

C) Ar_1 and Ar_2 independently of each other stand for optionally substituted phenyl; and

the optional substituents R_9 and R'_9 of Ar_1 and Ar_2 are selected from the group comprising bromo, chloro, fluoro, iodo, cyano, hydroxy, amino, nitro, methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, allyloxy, propargyloxy, benzyloxy, trifluoromethyl, trifluoromethoxy, 2-cyano-2-methyl-butyloxy, methylsulfonyl, methylsulfinyl, methylthio, cyclopentyl, cyclohexyl, aminocarbonylmethyl, methoximinoethyl, aminocarbonyl, butylcarbonylamino, tert-butylcarbonylamino, triazol-1-ylmethyl, 1,2,4-triazol-1-ylmethyl, N-morpholinocarbonylamino, aminocarbonyloxy-ethoxy, morpholinocarbonyloxyethoxy and cyanopyridyloxyethoxy; and

the optional substituent R_{10} on Ar_2 is selected from aminocarbonyl, dimethylaminocarbonyl, acetyl, propionyl, acetoxy, methoxycarbonyl, ethoxycarbonyl, benzoyl, methoximinoethyl, 1-imidazolyl, 5-(3-methyl-1,2,4-thiadiazolyloxy), 2-pyridyl, 2-pyridyloxy, 4-pyrimidinyl, 2-(3,5-dichloropyridyloxy), 2-(4,6-dichloropyridyloxy), 2-(4,6-dimethoxypyrimidinylthio), 2-oxadiazolyl, 2-(5-methyl-oxadazolyl), 2-(5-ethyl-oxadiazolyl), 1-triazolyl, 1-pyrazolyl, 1-(3,4-dimethylpyrazolyl), 4-(2-methylthiazolyl), 2-(1,3,4-oxydiazolyl), N-pyrrolidin-2-onyl, and 2-quinoxalinyl, and

R_1 and R_5 are independently C_1-C_4alkyl and R_2 and R_6 are hydrogen; and

R_3 is hydrogen, C_1-C_4alkyl or C_1-C_4alkoxy-C_1-C_4alkyl; and

R_4 is C_1-C_4alkyl or C_1-C_4haloalkyl; and

W is –O- ; and

X is a direct bond; and

the suffixes (a) and (b) designate the number 1 ; and

the suffix (c) stands for the number zero; or wherein

D) Ar_1 and Ar_2 independently of each other stand for optionally substituted phenyl; and

the optional substituents R_9 and R'_9 of Ar_1 and Ar_2 are selected from the group comprising bromo, chloro, fluoro, methyl, ethyl, methoxy, ethoxy, trifluoromethyl and trifluoromethoxy; and

the optional substituent R_{10} on Ar_2 is selected from aminocarbonyl, acetyl, methoxycarbonyl, ethoxycarbonyl, 1-imidazolyl, 5-(3-methyl-1,2,4-thiadiazolyloxy), 2-pyridyl, 2-pyridyloxy, 4-pyrimidinyl, 2-(3,5-dichloropyridyloxy), 2-(4,6-dimethoxypyrimidinylthio), 2-oxadiazolyl, 2-(5-methyl-oxadazolyl), 2-(5-ethyl-oxadiazolyl), 1-triazolyl, 1-pyrazolyl, 4-(2-methylthiazolyl), 2-(1,3,4-oxydiazolyl), and N-pyrrolidin-2-onyl, and

R_1 and R_5 are methyl and R_2 and R_6 are hydrogen; and

R_3 is hydrogen , methyl , ethyl, propyl, ethoxymethyl or methoxymethyl, and

R_4 is methyl , ethyl, propyl or fluoromethyl; and

W is –O- ; and

X is a direct bond; and

the suffixes (a) and (b) designate the number 1 ; and

the suffix (c) stands for the number zero.

Preferred individual compounds are:

2-[(4-chlorophenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,

2-[(4-chlorophenoxy)-methyl]-2-[(2-chlorophenyl)-methyl]-sulfonylamino-propionitrile,

2-[(4-chlorophenoxy)-methyl]-2-[(2-fluorophenyl)-methyl]-sulfonylamino-propionitrile,

2-[(4-trifluoromethoxyphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,

2-[(4-chloro-3-methylphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,

2-[(4-chlorophenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,

2-[(4-chlorophenoxy)-methyl]-2-benzylsulfonylamino-3-methoxy-propionitrile,

2-[(4-acetylphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,

2-[(4-methoxyphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,

2-[(4-acetylphenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,

2-[(4-cyanophenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,

(-)-2-[(4-cyanophenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,

2-[(4-propionylphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,

2-[(4-ethoxyphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,

2-[(4-[1,2,4]triazol-1-yl-phenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,

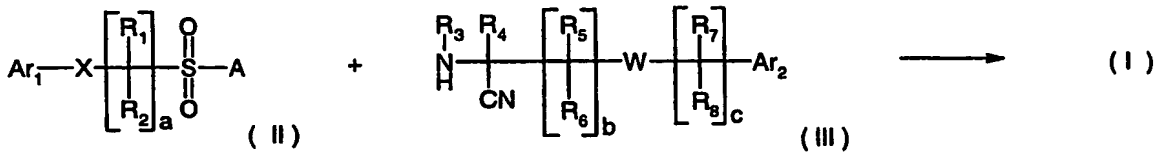
2-[(4-imidazol-1-yl-phenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,

2-[(4-cyanophenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-[1,3,4]oxadiazol-4-yl-phenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-methoxyphenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-ethoxyphenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
(-)2-[(4-ethoxyphenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-[1,2,4]triazol-1-yl-phenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-methoxycarbonylphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-propionylphenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-chlorophenoxy)-methyl]-2-benzylsulfonylamino-3-fluoro-propionitrile,
2-{[4-(2-methyl-thiazol-4-yl)-phenoxy]-methyl}-2-benzylsulfonylamino-butyronitrile,
2-[(4-pyrazol-1-yl-phenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-(5-oxo-5,6,7,8-tetrahydronaphth-2-yloxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-chloro-phenoxy)-methyl]-2-benzylsulfonylamino-3-methyl-butyronitrile,
2-[(4-iso-propyl-phenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-nitro-phenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-cyano-phenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(3-fluoro-4-propionyl-phenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
(-) -2-[(4-[1,2,4]triazol-1-yl-phenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile, and
(-)-2-[(4-acetylphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile.

Certain sulfonylamido-acetonitriles have been proposed for controlling plant-destructive fungi (for example in EP-A-176327 and EP-A-587110). The biological activity of those compounds is not, however, satisfactory in all aspects and for all needs of the agricultural practices in protecting crop plants.
Surprisingly, with developing the compounds of formula I a new type of microbiocides has been provided which satisfies to a greater extend the need for an agent for controlling phytopathogenic microorganisms on crop plants having a high level of activity, paired with long lasting effective protection.

The compounds of formula I and the respective starting materials may be obtained according to the processes of Schemes 1 to 5.

Scheme 1:



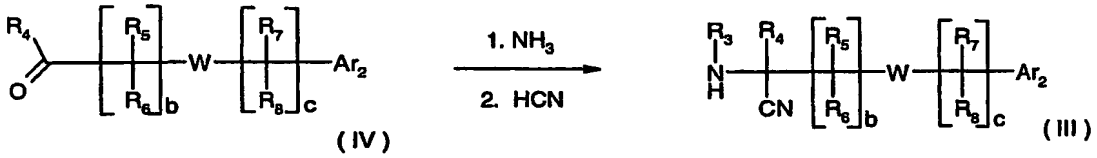
wherein Ar_1, Ar_2, a, b, c, W and R_1 to R_8 , are defined as under formula I, and A stands for a leaving group like an anhydride, i.e. $-O-SO_2-(CR_1R_2)_a-X-Ar_1$ or $-O-CO-C_1-C_4$alkyl, but preferably for halogen, especially bromine or more preferably chlorine.

The compounds of formula I may be prepared by sulfonylation of an amino-acetonitrile of formula III with a sulfonyl-halide / anhydride of formula II wherein A is a leaving group, Suitable solvents for this reaction include ketones, such as acetone and methylethylketone, halogenated hydrocarbons such as chloroform, carbontetrachloride, dichloromethane, dichloro-ethane, aromatic hydrocarbons such as toluene or xylene, ethers such as t-butyl-methyl-ether, di-ethyl-ether, tetrahydrofuran and dioxane. The reaction is performed preferentially in the presence of a base and a catalyst. Typical bases include tertiary amines such as trimethylamine, triethylamine, diisopropylethylamine, dimethyl-aniline, diazabi-cyclooctane and N-methylmorpholine, aromatic amines such pyridine and quinoline as well as inorganic bases such as alkaline bicarbonates or -carbonates. Typical salts are for example sodium and potassium bicarbonate and sodium, potassium or cesium carbonate. Suitable catalysts such as N,N-dialkyl- or cyloalkyl-aminopyridines, like e.g. 4-N,N-dime-thylaminopyridine, may improve the yield.

The substituents R_3 may be introduced into the final active ingredients when starting from the subgroup compounds of formula I wherein R_3 is hydrogen, by reacting them e.g. with an alkylating agent R_3-A' wherein A' designates a leaving group, preferably a halogen atom, e.g. bromo or chloro. Suitable alkylating agents thus include suitably substituted alkylhalides or alkyl-O-sulfonates, e.g. or alkoxy-alkylhalides. On the other hand, when introducing R_3 with the starting compounds of formula III, alkylating of the compounds of the subgroup of formula III , wherein R_3 is hydrogen, may be achieved in a similar way by any commonly known alkylation method. Such alkylation prior to sulfonylation with a compound of formula II, as alternative to converting R_3 within the final products of formula I, allows to introduce a wide variety of radicals R_3 while leaving the choice to decide at which stage such optional conversion is preferably performed.

Cyano-amines of formula III may easily be prepared by the so-called Strecker –Synthesis according to Scheme 2 as described e.g. generically in any textbook on organic chemistry, or in a procedures disclosed in the patent literature (EP-A-953565-A; Nihon Noyaku or US 3,529,019, Colgate-Palmolive) starting from the corresponding ketone of formula IV.

Scheme 2:

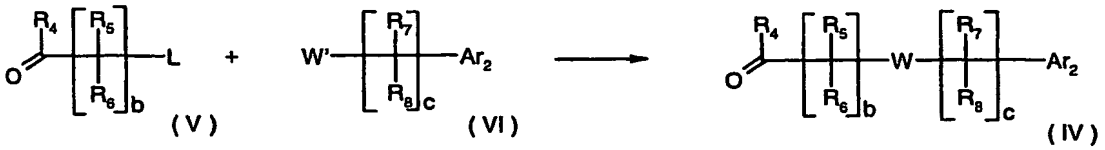


(IV) (III)

wherein Ar_2, b, c, W and R_5 to R_8 are defined as under formula I and L is a leaving group. The reaction conditions correspond to the standard conditions for preparing amino-acetonitriles by treatment with ammonia and prussic acid.

For the preparation of the ketones of formula IV various methods are known from the literature. Preferably the synthesis is for example conducted in accordance with Scheme 3 by starting from the ketone of formula V, wherein R_4, R_5, R_6 and b are defined as for formula I and L is a leaving group such as e.g. halogen, preferably chlorine, bromine or iodine or a sulfonyloxy group such as e.g. methylsulfonyloxy-, toluylsulfonyloxy- or trifluoromethylsulfonyloxy- group, and reacting it with a compound of formula VI wherein Ar_2, R_7, R_8 and c are defined as for formula I and W' is either an anionic radical species of W such as O^-, S^-, $S(O)_m^-$ combined with an alkaline- or earthalkaline – metal cation as counterion, or is defined as W-H , e.g. as OH, SH, NHR_3. In the latter case the reaction is generally carried out in the presence of a base such as alkaline-, earthalkaline-carbonates or hydrogencarbonates, e.g. sodium or potassium-carbonate, sodium or potassium -hydrogen-carbonate, cesium-carbonate or an agent capable of scavenging the formed acid.

Scheme 3:



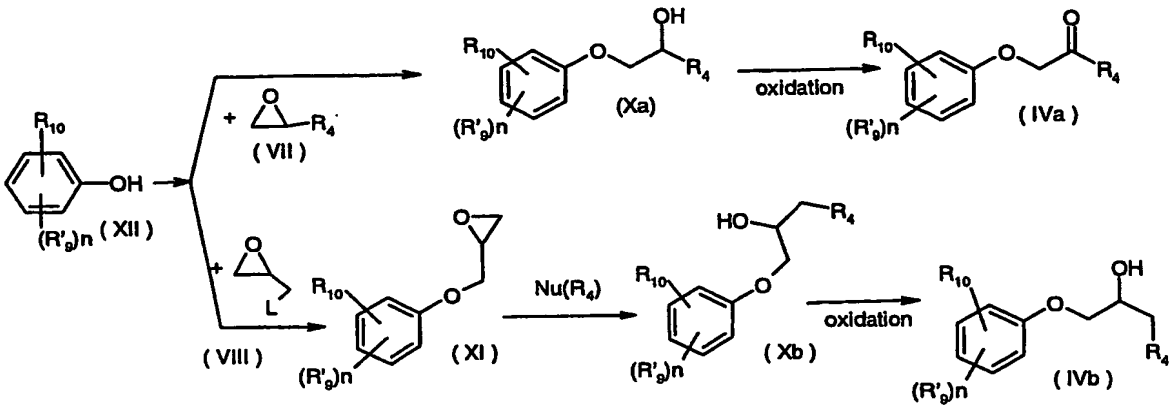
(V) (VI) (IV)

wherein Ar_2, b, c, W and R_4 to R_8 , are defined as under formula I and W' is either an anionic radical species of W such as O^-, S^-, $S(O)_m^-$ combined with an alkaline- or

earthalkaline – metal cation as counterion, or is defined as W-H , e.g. as OH, SH, NHR_3.

As a typical alternative method of preparing the intermediate ketones of formula (IV) Scheme 3A highlights two of the various pathways.

Scheme 3A:



wherein R_4 , R'_9 , R_{10} and n are as defined under formula I and L is a leaving group, while $Nu(R_4)$ designates the nucleophilic form of R_4, such as alkoxides or halides, especially iodides .

For the sake of simplicity in Scheme 3A the optionally substituted Ar_2 is displayed as phenyl, but it is assumed that the entire variation of Ar_2 as defined under formula I can be reacted similarly. According to Scheme 3A the selected intermediates of formula IVa may be prepared by oxidizing the corresponding alcohols of formulae Xa and Xb. Advantageous oxidation procedures include the sulfur-based oxidation agents (in literature referred to as Swern-oxidation, Pfizer-Moffat and others), the metal based oxidation agents, hydrogen peroxide in the presence of metal catalysts such as Na_2WO_4 (c.f. e.g. R.Noyori, Bull.Chem. Soc. Jpn. 1999, 72, 2287-2306) and others more.

The alcohols of formula Xa and Xb are available by ring-opening of an epoxide of formula VII or an epoxide of formula VIII , e.g. epichlorhydrine with a phenol of formula XII and in the latter case reacting the new intermediate epoxide of formula XI again with a nucleophilic derivative of $Nu(R_4)$ such as alkoxides or halides, especially iodides .

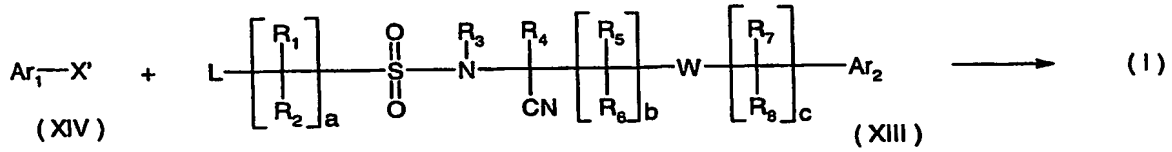
The ring opening reaction may be performed in the presence of a catalyst. Suitable catalysts include bases, such as amines like pyridine, tri-ethanolamine and the like, or metal hydroxides and/or carbonates such as lithium hydroxide, cesium carbonate, potassium

carbonate, potassium hydroxide, sodium hydroxide or metal hydrides, such as sodium hydride and lithium hydride or cesium fluoride as well as Lewis acids, such as tetramethylammonium chloride. Suitable solvents include alcohols, such as ethanol, isopropanol, tert-butanol and the like, ketones such as acetone and methyl ethyl ketone, and more polar solvents such as N,N-dimethylformamide, dimethylacetamide and nitriles, such as acetonitrile and propionitrile. The reaction temperature can vary within wide limits. It typically lies in the range of room temperature and the boiling point of the reaction mixture.
Preferable solvents for ring opening of the phenoxy-substituted epoxides of formula XI include polyalcohols such as ethyleneglycol, diethyleneglycol and triethyleneglycol, sulfoxides and sulfones such as dimethylsulfoxide and sulfolane as well as other polar solvents. A nucleophiles of special interest in this context is fluoride. Fluoride is typically used in form of potassium hydrogen difluoride (KHF_2). The nucleophilicity of the fluoride ion may be enhanced by phase transfer reagents such as quaternary ammonium salts and phosphonium salts as well as complexing agents such as crown ethers. The reaction temperature lies between +100°C and the boiling point of the reaction mixture.
In general, epoxides of the general formulae VII or VIII are commercially available or may be prepared according to published procedures such as reacting a phenol of the general formula XII with epichlorohydrine.

Many methods to prepare sulfonylation agent of formula II are known. General ways of preparing such compounds are e.g. described in Houben Weyl, Vol. E11, p 1067 ff (1985).

Another synthesis to prepare compounds of formula I is described in Scheme 4.

Scheme 4:



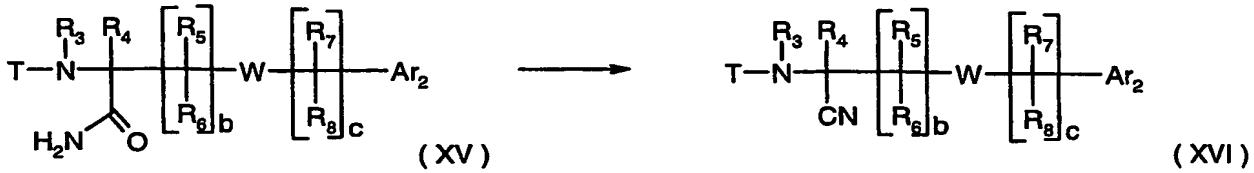
wherein Ar_1, Ar_2, a, b, c, X', W and R_1 to R_8 are defined as under formula I.

Compounds of formula XIII wherein Ar_2, b, c, W and R_3 to R_8 are defined as under formula I and L is a leaving group such as e.g. halogen, preferably chlorine, bromine or iodine or a sulfonyloxy group such a e.g. methylsulfonyloxy-, toluylsulfonyloxy- or trifluoromethylsulfo-

nyloxy- group, is coupled with a compound of formula XIV wherein X' is either an anionic radical species of X such as O^-, S^-, $S(O)_m^-$ combined with an alkaline- or earthalkaline–metal cation as counterion or is defined as X-H such as OH, SH, NHR_3. In this case the reaction are generally carried out in the presence of a base such as alkaline-, earthalkaline-carbonates or hydrogencarbonates such e.g. sodium or potassium-carbonate, sodium or potassium –hydrogen-carbonate, cesium-carbonate or an agent capable of scavenging the formed acid.

The starting material of the chemical class of cyano-amines of formula III may also be prepared as described in Scheme 5.

Scheme 5 :



(XV) (XVI)

wherein Ar_1, Ar_2, b, c, W and R_3 to R_8 are defined as under formula I and symbol T designates a protecting group such as the well-acknowlegded tert-butyloxycarbonyl- or benzyloxycarbonyl- groups , often referred to as (BOC)- or (Z)- groups, and converting the compund of formula XVI into the desired formula III by cleaving the protective group T off .

Many methods are known in the chemical literature e. g. Synthetic Comm. , 29 (23) ,4235-4239 (1999) or Synthesis (10), 1724-1726 (1999) or Tetrahedron Lett. 29 (18), 2155-2158 (1988) to convert amino acid –amides into amino-nitriles. The reaction conditions for the dihydratisation according to Scheme 5 may be adopted from known examples in the art.

Enantiomeric mixtures of formula I may be separated into the enantiomers by chromatography on chiral stationary phase or by classical methodes of fractionated crystallization of diastereomeric salts of a suitable precursor and subsequent conversion into the desired products. Enantiomers or diastereoisomers may also be prepared by enantioselective or diastereoselective synthesis methods.

The compounds of formula I are oils or solids at room temperature and are distinguished by

valuable microbiocidal properties. They can be used in the agricultural sector or related fields preventatively and curatively in the control of plant-destructive microorganisms. The compounds of formula I according to the invention are distinguished at low rates of concentration not only by outstanding microbiocidal, especially fungicidal, activity but also by being especially well tolerated by plants.

Surprisingly, it has now been found that the compounds of formula I have for practical purposes a very advantageous microbiocidal spectrum in the control of phytopathogenic microorganisms, especially fungi. They possess very advantageous curative and preventive properties and are used in the protection of numerous crop plants. With the compounds of formula I it is possible to inhibit or destroy phytopathogenic microorganisms that occur on various crops of useful plants or on parts of such plants (fruit, blossom, leaves, stems, tubers, roots), while parts of the plants which grow later also remain protected, for example, against phytopathogenic fungi.

The novel compounds of formula I prove to be effective against specific genera of the fungus class Fungi imperfecti (e.g. Cercospora), Basidiomycetes (e.g. Puccinia) and Ascomycetes (e.g. Erysiphe and Venturia) and especially against Oomycetes (e.g. Plasmopara, Peronospora, Pythium and Phytophthora). They therefore represent in plant protection a valuable addition to the compositions for controlling phytopathogenic fungi. The compounds of formula I can also be used as dressings for protecting seed (fruit, tubers, grains) and plant cuttings from fungal infections and against phytopathogenic fungi that occur in the soil.

The invention relates also to compositions comprising compounds of formula I as active ingredient, especially plant-protecting compositions, and to the use thereof in the agricultural sector or related fields.

In addition, the present invention includes the preparation of those compositions, wherein the active ingredient is homogeneously mixed with one or more of the substances or groups of substances described herein. Also included is a method of treating plants which is distinguished by the application of the novel compounds of formula I or of the novel compositions.

Target crops to be protected within the scope of this invention comprise, for example, the

following species of plants: cereals (wheat, barley, rye, oats, rice, maize, sorghum and related species); beet (sugar beet and fodder beet); pomes, stone fruit and soft fruit (apples, pears, plums, peaches, almonds, cherries, strawberries, raspberries and blackberries); leguminous plants (beans, lentils, peas, soybeans); oil plants (rape, mustard, poppy, olives, sunflowers, coconut, castor oil plants, cocoa beans, groundnuts); cucurbitaceae (marrows, cucumbers, melons); fibre plants (cotton, flax, hemp, jute); citrus fruit (oranges, lemons, grapefruit, mandarins); vegetables (spinach, lettuce, asparagus, cabbages, carrots, onions, tomatoes, potatoes, paprika); lauraceae (avocado, cinnamon, camphor) and plants such as tobacco, nuts, coffee, sugar cane, tea, pepper, vines, hops, bananas and natural rubber plants, and also ornamentals.

The compounds of formula I are normally used in the form of compositions and can be applied to the area or plant to be treated simultaneously or in succession with other active ingredients. Those other active ingredients may be fertilisers, micronutrient donors or other preparations that influence plant growth. It is also possible to use selective herbicides or insecticides, fungicides, bactericides, nematicides, molluscicides or mixtures of several of those preparations, if desired together with further carriers, surfactants or other application-promoting adjuvants customarily employed in formulation technology.

The compounds of formula I can be mixed with other fungicides, resulting in some cases in unexpected synergistic activities. Such mixtures are not limited to two active ingredients (one of formula I and one of the list of other fungicides), but to the contrary many comprise more than one active ingredient of the component of formula I and more than one other fungicide. Mixing components which are particularly suited for this purpose include e.g. azoles, such as azaconazole, BAY 14120, bitertanol, bromuconazole, cyproconazole, difenoconazole, diniconazole, epoxiconazole, fenbuconazole, fluquinconazole, flusilazole, flutriafol, hexaconazole, imazalil, imibenconazole, ipconazole, metconazole, myclobutanil, pefurazoate, penconazole, pyrifenox, prochloraz, propiconazole, simeconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, triflumizole, triticonazole; pyrimidinyl carbinoles, such as ancymidol, fenarimol, nuarimol; 2-amino-pyrimidines, such as bupirimate, dimethirimol, ethirimol; morpholines, such as dodemorph, fenpropidine, fenpropimorph, spiroxamine, tridemorph; anilinopyrimidines, such as cyprodinil, mepanipyrim, pyrimethanil; pyrroles, such as fenpiclonil, fludioxonil; phenylamides, such as benalaxyl, furalaxyl, metalaxyl, R-metalaxyl, ofurace, oxadixyl; benzimidazoles, such as benomyl, carbendazim,

debacarb, fuberidazole, thiabendazole; dicarboximides, such as chlozolinate, dichlozoline, iprodione, myclozoline, procymidone, vinclozoline; carboxamides, such as carboxin, fenfuram, flutolanil, mepronil, oxycarboxin, thifluzamide; guanidines, such as guazatine, dodine, iminoctadine; strobilurines, such as azoxystrobin, kresoxim-methyl, metominostrobin, SSF-129, trifloxystrobin, picoxystrobin, BAS 500F (proposed name pyraclostrobin), BAS 520; dithiocarbamates, such as ferbam, mancozeb, maneb, metiram, propineb, thiram, zineb, ziram; N-halomethylthiotetrahydrophthalimides, such as captafol, captan, dichlofluanid, fluoromides, folpet, tolyfluanid; Cu-compounds, such as Bordeaux mixture, copper hydroxide, copper oxychloride, copper sulfate, cuprous oxide, mancopper, oxine-copper; nitrophenol-derivatives, such as dinocap, nitrothal-isopropyl; organo-p-derivatives, such as edifenphos, iprobenphos, isoprothiolane, phosdiphen, pyrazophos, tolclofos-methyl; various others, such as acibenzolar-S-methyl, anilazine, benthiavalicarb, blasticidin-S, chinomethionate, chloroneb, chlorothalonil, cyflufenamid, cymoxanil, dichlone, diclomezine, dicloran, diethofencarb, dimethomorph, SYP-LI90 (proposed name: flumorph), dithianon, ethaboxam, etridiazole, famoxadone, fenamidone, fenoxanil, fentin, ferimzone, fluazinam, flusulfamide, fenhexamid, fosetyl-aluminium, hymexazol, iprovalicarb, IKF-916 (cyazofamid), kasugamycin, methasulfocarb, metrafenone, nicobifen, pencycuron, phthalide, polyoxins, probenazole, propamocarb, pyroquilon, quinoxyfen, quintozene, sulfur, triazoxide, tricyclazole, triforine, validamycin, zoxamide (RH7281).

In the above mentioned mixtures, the mixture ratio of the active ingredients is so selected that it reaches optional control of the phytopathogenic microorganism on the host plants. This ratio is in general between 100:1 and 1:100, more preferably between 10:1 and 1:10 of a compound of formula I vis-à-vis the second fungicide. The mixtures may not only comprise one of the listed combinational active ingredients, but may comprise more than one additional active ingredients selected from that specified group, thus forming for example 3-way- or even 4-way-mixtures.

Suitable carriers and surfactants may be solid or liquid and correspond to the substances ordinarily employed in formulation technology, such as e.g. natural or regenerated mineral substances, solvents, dispersants, wetting agents, tackifiers, thickeners, binders or fertilisers. Such carriers and additives are described, for example, in WO 95/30651.

A preferred method of applying a compound of formula I, or an agrochemical composition

comprising at least one of those compounds, is application to the foliage (foliar application), the frequency and the rate of application depending upon the risk of infestation by the pathogen in question. The compounds of formula I may also be applied to seed grains (coating) either by impregnating the grains with a liquid formulation of the active ingredient or by coating them with a solid formulation.

The compounds of formula I are used in unmodified form or, preferably, together with the adjuvants conventionally employed in formulation technology, and are for that purpose advantageously formulated in known manner e.g. into emulsifiable concentrates, coatable pastes, directly sprayable or dilutable solutions, dilute emulsions, wettable powders, soluble powders, dusts, granules, and by encapsulation in e.g. polymer substances. As with the nature of the compositions, the methods of application, such as spraying, atomising, dusting, scattering, coating or pouring, are chosen in accordance with the intended objectives and the prevailing circumstances.

Advantageous rates of application are normally from 1 g to 2 kg of active ingredient (a.i.) per hectare (ha), preferably from 10 g to 1 kg a.i./ha, especially from 25 g to 750 g a.i./ha. When used as seed dressings, rates of from 0.001 g to 5.0 g of active ingredient per kg of seed are advantageously used.

The formulations, i.e. the compositions, preparations or mixtures comprising the compound(s) (active ingredient(s)) of formula I and, where appropriate, a solid or liquid adjuvant, are prepared in known manner, e.g. by homogeneously mixing and/or grinding the active ingredient with extenders, e.g. solvents, solid carriers and, where appropriate, surface-active compounds (surfactants).

Further surfactants customarily used in formulation technology will be known to the person skilled in the art or can be found in the relevant technical literature.

The agrochemical compositions usually comprise 0.01 to 99 % by weight, preferably 0.1 to 95 % by weight, of a compound of formula I, 99.99 to 1 % by weight, preferably 99.9 to 5 % by weight, of a solid or liquid adjuvant, and 0 to 25 % by weight, preferably 0.1 to 25 % by weight, of a surfactant.

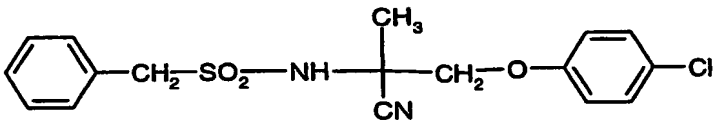
Whereas commercial products will preferably be formulated as concentrates, the end user will normally employ dilute formulations.

The compositions may also comprise further ingredients, such as stabilisers, antifoams, viscosity regulators, binders and tackifiers, as well as fertilisers or other active ingredients for obtaining special effects.

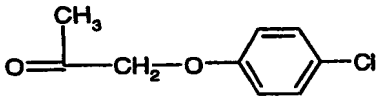
The Examples which follow illustrate the invention described above, without limiting the scope thereof in any way. Temperatures are given in degrees Celsius.

Preparation Examples :

Example 1: 2-(4-Chlorophenoxy-methyl)-2-benzylsulfonylamino-propionitrile

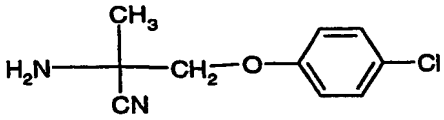


a) 1-(4-Chlorophenoxy)-propan-2-one



A suspension of 4-chlorophenol (2.6g, 20mmol), chloroacetone (2.8g, 30mmol) and potassium carbonate (3.45g, 25mmol) in acetone (100ml) is heated at reflux for 3 hours. The precipitating inorganic salts are filtered off and the filtrate is evaporated to dryness to give the 1-(4-chlorophenoxy)-propan-2-one.

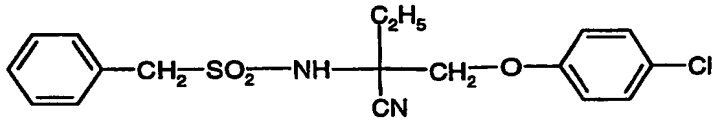
b) 2-(4-Chlorophenoxy-methyl)-2- amino-propionitrile



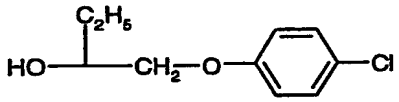
suspension of 1-(4-chloro-phenoxy)-propan-2-one (3.7g, 20mmol), ammonium chloride (1.6g, 29.2mmol) and sodium cyanide (1.15g, 23.3mmol) in a solution of aqueous ammonia (100ml, 28%) is stirred vigorously at room temperature for 20 hours. The aqueous phase is extracted repeatedly with ethyl acetate. The collected organic extracts are dried and the solvent is evaporated under reduced pressure to give the 2-(4-chlorophenoxy-methyl)-2-amino-propionitrile as a solid.

c) A solution of 2-(4-chlorophenoxy-methyl)-2- amino-propionitrile (0.5g, 2.4mmol) and benzylsulfonyl chloride (0.5g, 2.6mmol) in pyridine (5ml) is heated at +80°C with stirring in the presence of DMAP (0.02g) for about 16 hours. The reaction mixture is diluted with ethyl acetate and washed with brine. The organic phase is dried over magnesium sulfate and the product is purified by flash chromatography (eluent: ethyl acetate / hexanes 1:3) to give the 2-(4-chlorophenoxy-methyl)-2-benzylsulfonylamino-propionitrile in form of a colorless solid, m.p. 120-121°C.

Example 2: 2-(4-Chlorophenoxy-methyl)-2-benzylsulfonylamino-butyronitrile

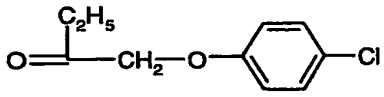


a) 1-(4-Chlorophenoxy)-butane-2-ol



A suspension of chlorophenol (9.0g, 0.07mol) and butyleneoxide (6.9ml, 0.08mmol) in toluene (80ml) is heated at reflux with stirring in the presence of a catalytic amount of cesium fluoride (1.5g) for 20 hours. The reaction mixture is washed with an aqueous solution of sodium hydroxide and dried. The volatiles are evaporated under reduced pressure to give the 1-(4-chloro-phenoxy)-butane-2-ol as a colorless solid.

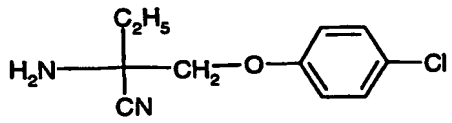
b) 1-(4-Chlorophenoxy)-butan-2-one



Oxalylchloride (1.0ml, 0.011mmol) is added to a solution of dimethylsulfoxide (DMSO) (1.7ml, 0.022mol) in methylenechloride (20ml) at –60°C. 1-(4-Chlorophenoxy)-butan-2-ol (2.0g, 0.01mol) is added in one portion. After 15 minutes triethylamine (7ml, 0.05mol) is added and the reaction temperature is allowed to warm up and reach 0°C. The mixture is diluted with diethylether and washed repeatedly with brine. The organic phase is dried, filtered evaporated to give the 1-(4-chlorophenoxy)-butane-2-one.

^{1}H-NMR ($CDCl_3$): 7.26 (d, 2H); 6.82 (d, 2H); 4.53 (s, 2H); 2.60 (q, 2H); 1.12 (t, 3H).

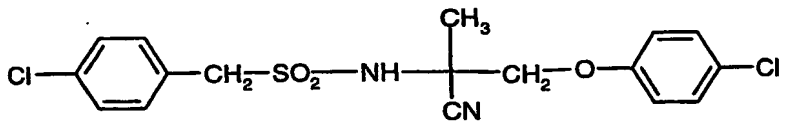
c) 2-(4-Chlorophenoxy)-methyl)-2-amino-butyronitrile



A suspension of 1-(4-chloro-phenoxy)-butan-2-one (3.0g, 15mmol), ammonium chloride (1.3g, 25mmol) and sodium cyanide (1.0g, 20mmol) in a solution of aqueous ammonia (100ml, 28%) is stirred vigorously at room temperature for 20 hours. The aqueous phase is extracted repeatedly with ethyl acetate. The combined organic phases are dried over sodium sulfate and the solvent is evaporated under reduced pressure to give the 2-(4-chlorophenoxy)-methyl)-2-amino-butyronitrile as an oil having sufficient purity for being directly employable for the following reaction step.

d) A solution of 2-(4-chlorophenoxy)-methyl)-2-amino-butyronitrile (0.5g, 2.2mmol), benzylsulfonyl chloride (0.50g, 2.6mmol) and diazabicyclooctane (1.0g, 4mmol) in anhydrous tetrahydrofuran (20ml) is stirred for about 16 hours. The reaction mixture is diluted with ethyl acetate and washed with brine. The organic phase is dried over magnesium sulfate and the residue raw product is purified by flash chromatography (eluent: ethyl acetate / hexanes 1:3) to give the 2-(4-chlorophenoxy-methyl)-2-benzylsulfonylamino-butyronitrile in form of a colorless oil. ^{1}H-NMR ($CDCl_3$): 7.54-7.50 (m, 2H); 7.46-7.40(m,3H); 7.30 (d,2H); 6.84 (d, 2H); 4.70 (s, 1H); 4.49 (s, 2H); 4.22 (dxd, 2H); 2.26-2.04 (m, 2H); 1.12 (t, 3H).

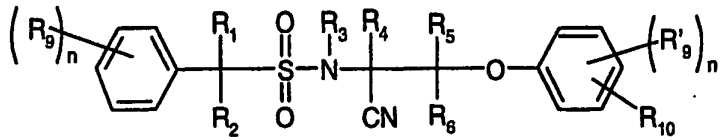
Example 3: 2-(4-Chlorophenoxy-methyl)-2-(4-chlorophenyl-methylsulfonyl)-propionitrile



A solution of 2-amino-2-(4-chlorophenoxymethyl)-propionitrile (0.5g, 0.24mmol), 4-chlorophenyl-methylsulfonyl chloride (0.46g, 2.4mmol) and diazabicyclooctane (0.6g, 2.4mmol) in anhydrous tetrahydrofuran (20ml) is stirred for about 16 hours. The reaction mixture is diluted with ethyl acetate and washed with brine. The organic phase is dried over magnesium sulfate and the raw product received as the residue is purified by flash chromato-graphy (eluent: ethyl acetate / hexanes 1:3) to give the 2-(4-chlorophenoxy-methyl)-2-(4-chlorophenyl-methylsulfonyl)-propionitrile in form of colorless crystals, m.p. 119-120°C.

In analogous manner the compounds of following Table 1 are obtained.

Table 1:



No.	R_1	R_2	R_3	R_4	R_5	R_6	$(R_9)_n$	$(R'_9)_n$	R_{10}	m.p.[° C]
001	H	H	H	CH_3	H	H	H	2-Cl	H	solid
002	H	H	H	CH_3	H	H	4-F	2-Cl	H	
003	CH_3	H	H	CH_3	H	H	H	2-Cl	H	
004	H	H	H	CH_2CH_3	H	H	H	2-Cl	H	
005	H	H	H	$CH_2CH_2CH_3$	H	H	H	2-Cl	H	
006	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	2-Cl	H	
007	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	2-Cl	H	
008	H	H	H	CH_3	H	H	H	2,3-Cl_2	H	solid
009	H	H	H	CH_2CH_3	H	H	H	2,3-Cl_2	H	
010	H	H	H	$CH_2(CH_3)_2$	H	H	H	2,3-Cl_2	H	
011	H	H	H	CH_2F	H	H	H	2,3-Cl_2	H	
012	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	2,3-Cl_2	H	
013	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	2,3-Cl_2	H	
014	H	H	H	CH_3	H	H	H	3,4-Cl_2	H	
015	H	H	H	CH_2CH_3	H	H	H	3,4-Cl_2	H	
016	H	H	H	$CH_2(CH_3)_2$	H	H	H	3,4-Cl_2	H	

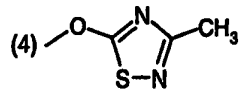
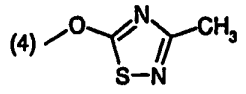
017	H	H	H	CH_2F	H	H	H	3,4-Cl_2	H	
018	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	3,4-Cl_2	H	
019	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	3,4-Cl_2	H	
020	H	H	H	CH_3	H	H	H	2,4-Cl_2	H	solid
021	H	H	H	CH_2CH_3	H	H	H	2,4-Cl_2	H	
022	H	H	H	$CH_2(CH_3)_2$	H	H	H	2,4-Cl_2	H	
023	H	H	H	CH_2F	H	H	H	2,4-Cl_2	H	
024	H	H	H	CH_2CH_3	H	H	CH_3	2,4-Cl_2	H	
025	H	H	H	CH_2CH_3	H	H	H	2,4-Cl_2	H	
026	H	H	CH_2-OCH_2CH_3	CH_3	H	H	4-F	2,4-Cl_2	H	
027	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	2,4-Cl_2	H	
028	H	H	H	CH_3	H	H	H	4-CF_3	H	142-143
029	H	H	H	CH_3	H	H	4-F	4-CF_3	H	
030	CH_3	H	H	CH_3	H	H	H	4-CF_3	H	
031	H	H	H	CH_2CH_3	H	H	H	4-CF_3	H	
032	H	H	H	$CH_2CH_2CH_3$	H	H	H	4-CF_3	H	
033	CH_3	CH_3	H	CH_3	H	H	H	4-CF_3	H	
034	H	H	H	CH_3	H	H	H	4- $CH(CH_3)_2$	H	
035	H	H	H	CH_3	H	H	4-F	4- $CH(CH_3)_2$	H	
036	CH_3	H	H	CH_3	H	H	H	4- $CH(CH_3)_2$	H	
037	H	H	H	CH_2CH_3	H	H	H	4- $CH(CH_3)_2$	H	
038	H	H	H	$CH_2CH_2CH_3$	H	H	H	4- $CH(CH_3)_2$	H	

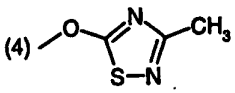
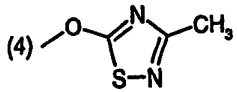
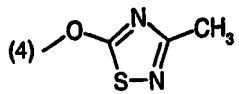
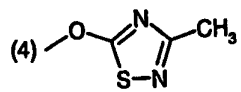
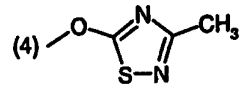
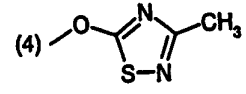
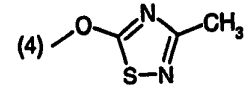
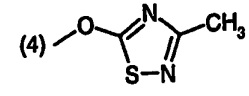
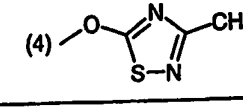
039	CH_3	CH_3	H	CH_3	H	H	H	4- $CH(CH_3)_2$	H	
040	H	H	H	CH_3	H	H	H	4-Cl	H	120-121
041	H	H	H	CH_3	H	H	2-CH_3	4-Cl	H	oil
042	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	4-Cl	H	
043	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	4-Cl	H	
044	H	H	H	CH_3	H	H	2-Cl	4-Cl	H	116-117
045	H	H	H	CH_3	H	H	4-F	4-Cl	H	105-106
046	H	H	H	CH_3	H	H	4-SO_2CH_3	4-Cl	H	134-137
047	H	H	H	CH_3	H	H	3-Cl	4-Cl	H	110-111
048	H	H	H	CH_3	H	H	2-CF_3	4-Cl	H	98-100
049	H	H	H	CH_3	H	H	2,6-Cl_2	4-Cl	H	oil
050	H	H	H	CH_3	H	H	2-F	4-Cl	H	96-97
051	H	H	H	CH_3	H	H	4-Cl	4-Cl	H	119-120
052	H	H	H	CH_2CH_3	H	H	H	4-Cl	H	oil
053	H	H	CH_3	CH_3	H	H	H	4-Cl	H	oil
054	H	H	H	CH_2OC-$(CH_3)_3$	H	H	H	4-Cl	H	oil
055	H	H	H	CH_2OCH_2CH-$(CH_3)_2$	H	H	H	4-Cl	H	oil
056	H	H	H	$CH_2OCH_2CH=CH_2$	H	H	H	4-Cl	H	77-78
057	H	H	H	CH_2OCH_3	H	H	H	4-Cl	H	oil
058	H	H	H	$(CH_2)_2CH_3$	H	H	H	4-Cl	H	oil
059	H	H	H	CH_2F	H	H	H	4-Cl	H	oil
060	H	H	H	H	H	H	H	2,4-Cl_2-6(N=CHCH=CH)-5		solid

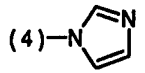
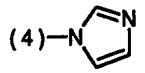
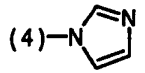
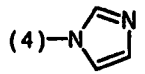
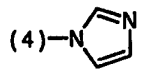
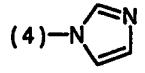
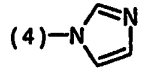
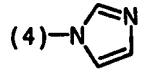
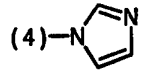
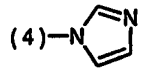
061	H	H	H	$CH(CH_3)_2$	H	H	H	4-Cl	H	resinous
062	H	H	H	$C(CH_3)_3$	H	H	H	4-Cl	H	solid
063	H	H	H	CH_2CH_3	CH_3	H	H	4-Cl	H	
064	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-Cl	H	
065	H	H	H	CH_3	CH_3	H	H	4-Cl	H	
066	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	4-Cl	H	
067	H	H	H	CH_3	CH_3	CH_3	H	4-Cl	H	
068	H	H	H	CH_3	H	H	H	3-OCH_3,4-Cl	H	68
069	H	H	H	CH_3	H	H	H	2-OCH_3, 4-Cl	H	108-109
070	H	H	H	CH_2CH_3	H	H	H	2-OCH_3, 4-Cl	H	
071	H	H	H	CH_3	H	H	H	4-OCF_3	H	124-125
072	H	H	H	CH_3	H	H	4-F	4-OCF_3	H	
073	CH_3	H	H	CH_3	H	H	H	4-OCF_3	H	
074	H	H	H	CH_2CH_3	H	H	H	4-OCF_3	H	
075	H	H	H	$CH_2CH_2CH_3$	H	H	H	4-OCF_3	H	
076	H	H	H	CH_2CH_3	CH_3	H	H	4-OCF_3	H	
077	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-OCF_3	H	
078	CH_3	H	H	CH_2CH_3	H	H	H	4-OCF_3	H	
079	H	H	H	CH_3	H	H	H	2-F;4-Cl	H	oil
080	H	H	H	CH_3	H	H	H	2-CH_3; 4-Cl	H	oil
081	H	H	H	CH_3	H	H	H	4-F	H	100-103
082	H	H	H	CH_3	H	H	4-F	4-F	H	

083	CH_3	H	H	CH_3	H	H	H	4-F	H	
084	H	H	H	CH_2CH_3	H	H	H	4-F	H	
085	H	H	H	$CH_2CH_2CH_3$	H	H	H	4-F	H	
086	H	H	H	CH_2CH_3	CH_3	H	H	4-F	H	
087	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-F	H	
088	CH_3	CH_3	H	CH_3	CH_3	CH_3	H	4-F	H	
089	H	H	H	CH_3	H	H	H	2,4,6-Cl_3	H	128-130
090	H	H	H	CH_3	H	H	H	3-F; 4-Cl	H	123-124
091	H	H	H	CH_3	H	H	H	3-CH_3; 4-Cl	H	109-110
092	H	H	H	CH_3	H	H	H	H	4-C_6H_5	135-136
093	H	H	H	CH_3	H	H	H	4- CH_3	H	89-90
094	H	H	H	CH_3	H	H	4-F	4- CH_3	H	
095	CH_3	H	H	CH_3	H	H	H	4- CH_3	H	
096	H	H	H	CH_2CH_3	H	H	H	4- CH_3	H	
097	H	H	H	$CH_2CH_2CH_3$	H	H	H	4- CH_3	H	
098	H	H	H	CH_2CH_3	CH_3	H	H	4- CH_3	H	
099	H	H	H	CH_3	H	H	H	-C_6H_{11} (cycl)	H	145-146
100	H	H	H	CH_3	H	H	H	3- CH_3	H	88-89
101	H	H	H	CH_3	H	H	H	3,5-$(CH_3)_2$; 4-Cl	H	118-119
102	H	H	H	CH_3	H	H	H	3-CH_2CH_3, 4-Cl	H	115-116
103	H	H	H	CH_3	CH_3	CH_3	H	3-CH_2CH_3, 4-Cl	H	
104	H	H	H	CH_3	H	H	H	4-OCH_3	H	oil

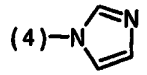
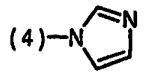
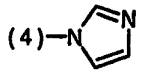
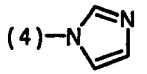
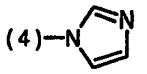
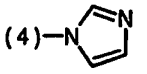
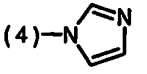
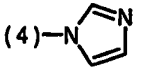
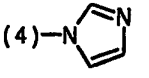
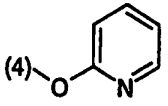
105	H	H	H	CH_2CH_3	H	H	H	4-OCH_3	H	127-128
106	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	4-OCH_3	H	
107	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	4-OCH_3	H	
108	H	H	H	CH_2CH_3	H	H	4-F	4-OCH_3	H	
109	H	H	H	CH_3	H	H	4-F	4-OCH_3	H	
110	CH_3	H	H	CH_2CH_3	H	H	4-F	4-OCH_3	H	
111	CH_3	H	H	CH_3	H	H	4-F	4-OCH_3	H	
112	CH_3	H	H	CH_2CH_3	H	H	H	4-OCH_3	H	
113	CH_3	H	H	CH_3	H	H	H	4-OCH_3	H	
114	CH_3	H	H	CH_2CH_3	H	H	H	4-OCH_3	H	
115	CH_3	H	H	CH_3	H	H	H	4-OCH_3	H	
116	CH_3	CH_3	H	CH_2CH_3	CH_3	H	H	4-OCH_3	H	
117	CH_3	CH_3	H	CH_3	CH_3	H	H	4-OCH_3	H	
118	H	H	H	CH_2CH_3	H	H	4-Cl	4-OCH_3	H	
119	H	H	H	CH_3	H	H	4-Cl	4-OCH_3	H	
120	H	H	H	CH_2CH_3	H	H	2-F	4-OCH_3	H	
121	H	H	H	CH_3	H	H	2-F	4-OCH_3	H	
122	H	H	H	CH_2CH_3	H	H	2,4-F_2	4-OCH_3	H	
123	H	H	H	CH_3	H	H	2,4-F_2	4-OCH_3	H	
124	H	H	H	CH_2CH_3	H	H	2,4-Cl_2	4-OCH_3	H	
125	H	H	H	CH_3	H	H	2,4-Cl_2	4-OCH_3	H	
126	H	H	H	CH_2CH_3	H	H	3,4-F_2	4-OCH_3	H	

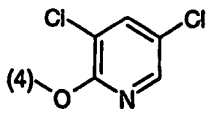
127	H	H	H	CH_3	H	H	3,4-F_2	4-OCH_3	H	
128	H	H	H	CH_2CH_3	H	H	3,4-Cl_2	4-OCH_3	H	
129	H	H	H	CH_3	H	H	3,4-Cl_2	4-OCH_3	H	
130	H	H	H	CH_2CH_3	H	H	4-CH_3	4-OCH_3	H	
131	H	H	H	CH_3	H	H	4-CH_3	4-OCH_3	H	
132	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-OCH_3	H	
133	H	H	H	CH_3	CH_3	CH_3	H	4-OCH_3	H	
134	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	4-OCH_3	H	
135	H	H	H	CH_2CH_3	H	H	H	3-F; 4-OCH_3	H	
136	H	H	H	CH_2CH_3	H	H	H	3-Cl; 4-OCH_3	H	
137	H	H	H	CH_2CH_3	H	H	H	2-F; 4-OCH_3	H	
138	H	H	H	CH_2CH_3	H	H	H	2-Cl; 4-OCH_3	H	
139	H	H	H	CH_3	H	H	H	3-F; 4-OCH_3	H	
140	H	H	H	CH_3	H	H	H	3-Cl; 4-OCH_3	H	
141	H	H	H	CH_3	H	H	H	2-F; 4-OCH_3	H	
142	H	H	H	CH_3	H	H	H	2-Cl; 4-OCH_3	H	
143	H	H	H	CH_2CH_3	CH_2CH_3	CH_2CH_3	H	4-OCH_3	H	
144	H	H	H	CH_3	H	H	H	H		oil
145	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	H		

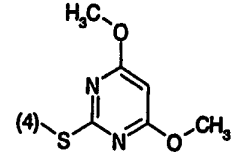
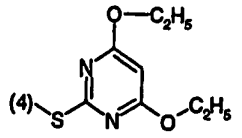
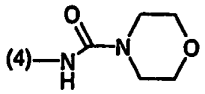
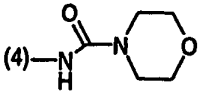
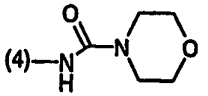
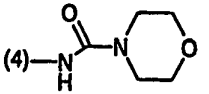
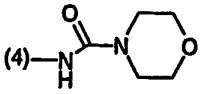
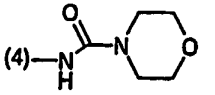
146	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H	(4) 	
147	H	H	H	CH_3	H	H	4-F	H	(4) 	
148	CH_3	H	H	CH_3	H	H	H	H	(4) 	
149	H	H	H	CH_2CH_3	H	H	H	H	(4) 	
150	H	H	H	$CH_2CH_2CH_3$	H	H	H	H	(4) 	
151	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	H	(4) 	
152	H	H	H	CH_2CH_3	CH_3	H	H	H	(4) 	
153	H	H	H	CH_2CH_3	CH_3	CH_3	H	H	(4) 	
154	H	H	H	CH_2CH_3	H	H	H	2-Cl	(4) 	
155	H	h	H	CH_3	H	H	H	4-CH_2CONH_2	H	113-116
156	H	H	H	CH_2CH_3	H	H		4-CH_2CONH_2	H	

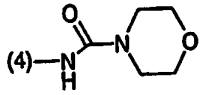
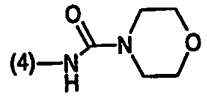
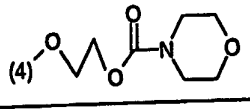
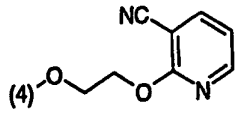
157	H	H	H	CH_3	H	H	H	H		128-131
158	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	H		
159	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H		
160	H	H	H	CH_2CH_3	H	H	4-F	H		
161	H	H	H	CH_3	H	H	4-F	H		
162	CH_3	H	H	CH_3	H	H	H	H		
163	CH_3	H	H	CH_2CH_3	H	H	H	H		
164	H	H	H	CH_2CH_3	H	H	4-Cl	H		
165	H	H	H	CH_3	H	H	4-Cl	H		
166	H	H	H	CH_2CH_3	H	H	2-F	H		

167	H	H	H	CH_3	H	H	2-F	H	(4)–N	
168	H	H	H	CH_2CH_3	H	H	2,4-F_2	H	(4)–N	
169	H	H	H	CH_3	H	H	2,4-F_2	H	(4)–N	
170	H	H	H	CH_2CH_3	H	H	4-CH_3	H	(4)–N	
171	H	H	H	CH_3	H	H	4-CH_3	H	(4)–N	
172	H	H	H	CH_2CH_3	H	H	H	3-F	(4)–N	
173	H	H	H	CH_2CH_3	H	H	H	3-Cl	(4)–N	
174	H	H	H	CH_2CH_3	H	H	H	2-F	(4)–N	
175	H	H	H	CH_2CH_3	H	H	H	2-Cl	(4)–N	
176	H	H	H	CH_3	H	H	H	3-F	(4)–N	

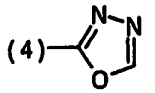
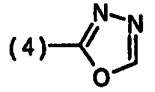
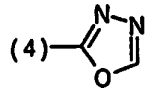
177	H	H	H	CH_3	H	H	H	3-Cl		
178	H	H	H	CH_3	H	H	H	2-F		
179	H	H	H	CH_3	H	H	H	2-Cl		
180	H	H	H	$(CH_2)_2CH_3$	H	H	H	H		
181	H	H	H	$CH_2(CH_3)_2$	H	H	H	H		
182	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	H		
183	H	H	H	CH_2CH_3	CH_3	H	H	H		
184	H	H	H	CH_2CH_3	CH_3	CH_3	H	H		
185	CH_3	CH_3	H	CH_2CH_3	H	H	H	H		
186	H	H	H	CH_3	H	H	H	H		169-170

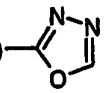
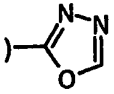
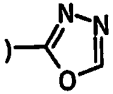
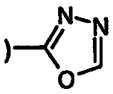
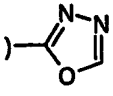
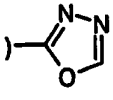
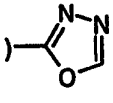
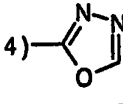
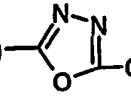
187	H	H	H	CH_3	H	H	H	4-$O(CH_2)_5CH_3$	H	93-94
188	H	H	H	CH_3	H	H	H	H	4-$C(CH_3)=NOCH_3$	106-107
189	H	H	H	CH_2CH_3	H	H	H	H	4-$C(CH_3)=NOCH_3$	
190	H	H	H	CH_3	H	H	H	H	4-$CONH_2$	174-176
191	H	H	H	CH_3	H	H	4-F	H	4-$CONH_2$	
192	CH_3	H	H	CH_3	H	H	H	H	4-$CONH_2$	
193	H	H	H	CH_2CH_3	H	H	H	H	4-$CONH_2$	
194	H	H	H	$CH_2CH_2CH_3$	H	H	H	H	4-$CONH_2$	
195	H	H	H	CH_2CH_3	CH_3	H	H	H	4-$CONH_2$	
196	CH_3	CH_3	H	CH_3	H	H	H	H	4-$CONH_2$	
197	H	H	H	CH_3	H	H	H	H		oil
198	H	H	H	CH_3	H	H	H	4-($C(=NOCH_3)CH_2$-CH_2-CH_2-CH_2)-3		100
199	H	H	H	CH_3	H	H	H	4-$NHCOC(CH_3)_3$	H	165-166
200	H	H	H	CH_2CH_3	H	H	H	4-$NHCOC(CH_3)_3$	H	
201	H	H	H	CH_3	H	H	H	4-SCH_3	H	102
202	H	H	H	CH_3	H	H	4-F	4-SCH_3	H	
203	CH_3	H	H	CH_3	H	H	H	4-SCH_3	H	
204	H	H	H	CH_2CH_3	H	H	H	4-SCH_3	H	
205	H	H	H	$CH_2CH_2CH_3$	H	H	H	4-SCH_3	H	
206	H	H	H	CH_2CH_3	CH_3	H	H	4-SCH_3	H	

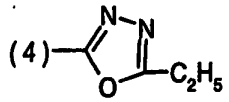
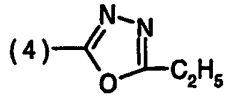
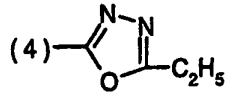
207	H	H	H	CH_3	CH_3	H	H	4-SCH_3	H	
208	H	H	H	CH_3	H	H	H	4-$OCH(CH_3)CONH_2$	H	oil
209	H	H	H	CH_3	H	H	H	H		142
210	H	H	H	CH_3	H	H	H	H		89-90
211	H	H	H	CH_3	H	H	H		H	180-181
212	H	H	H	CH_3	H	H	4-F		H	
213	CH_3	H	H	CH_3	H	H	H		H	
214	H	H	H	CH_2CH_3	H	H	H		H	
215	H	H	H	$CH_2CH_2CH_3$	H	H	H		H	
216	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H		H	

217	H	H	H	CH_2CH_3	CH_3	H	H		H	
218	H	H	H	CH_2CH_3	CH_3	CH_3	H		H	
219	H	H	H	CH_3	H	H	4-Cl	4-SO_2CH_3	H	
220	H	H	H	CH_3	H	H	H	4-SO_2CH_3	H	152-153
221	H	H	H	CH_3	H	H	4-F	4-SO_2CH_3	H	
222	CH_3	H	H	CH_3	H	H	H	4-SO_2CH_3	H	
223	H	H	H	CH_2CH_3	H	H	H	4-SO_2CH_3	H	
224	H	H	H	$CH_2CH_2CH_3$	H	H	H	4-SO_2CH_3	H	
225	H	H	H	CH_2CH_3	CH_3	H	H	4-SO_2CH_3	H	
226	H	H	H	CH_3	H	H	H		H	119-120
227	H	H	H	CH_3	H	H	H		H	oil
228	H	H	H	CH_2CH_3	H	H	H	4-CN	H	oil
229	H	H	H	CH_3	H	H	H	4-CN	H	153-154
230	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	4-CN	H	
231	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	4-CN	H	oil
232	H	H	H	CH_2CH_3	H	H	4-F	4-CN	H	
233	H	H	H	CH_3	H	H	4-F	4-CN	H	

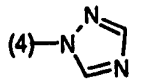
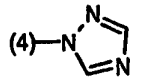
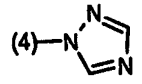
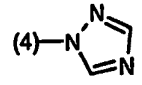
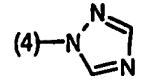
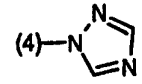
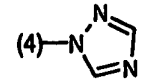
234	CH_3	H	H	CH_2CH_3	H	H	4-F	4-CN	H	
235	CH_3	H	H	CH_3	H	H	4-F	4-CN	H	
236	CH_3	H	H	CH_2CH_3	H	H	H	4-CN	H	
237	CH_3	H	H	CH_3	H	H	H	4-CN	H	
238	CH_3	H	H	CH_2CH_3	H	H	H	4-CN	H	
239	CH_3	H	H	CH_3	H	H	H	4-CN	H	
240	CH_3	CH_3	H	CH_2CH_3	CH_3	H	H	4-CN	H	
241	CH_3	CH_3	H	CH_3	CH_3	H	H	4-CN	H	
242	H	H	H	CH_2CH_3	H	H	4-Cl	4-CN	H	
243	H	H	H	CH_3	H	H	4-Cl	4-CN	H	
244	H	H	H	CH_2CH_3	H	H	2-F	4-CN	H	
245	H	H	H	CH_3	H	H	2-F	4-CN	H	
246	H	H	H	CH_2CH_3	H	H	2,4-F_2	4-CN	H	
247	H	H	H	CH_3	H	H	2,4-F_2	4-CN	H	
248	H	H	H	CH_2CH_3	H	H	2,4-Cl_2	4-CN	H	
249	H	H	H	CH_3	H	H	2,4-Cl_2	4-CN	H	
250	H	H	H	CH_2CH_3	H	H	3,4-F_2	4-CN	H	
251	H	H	H	CH_3	H	H	3,4-F_2	4-CN	H	
252	H	H	H	CH_2CH_3	H	H	3,4-Cl_2	4-CN	H	
253	H	H	H	CH_3	H	H	3,4-Cl_2	4-CN	H	
254	H	H	H	CH_2CH_3	H	H	4-CH_3	4-CN	H	
255	H	H	H	CH_3	H	H	4-CH_3	4-CN	H	

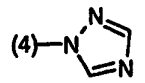
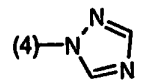
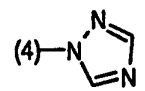
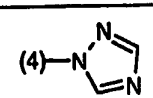
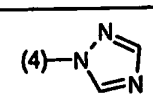
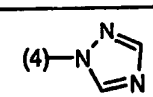
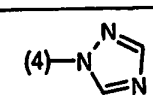
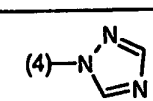
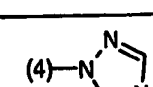
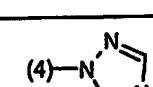
256	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-CN	H	
257	H	H	H	CH_3	CH_3	CH_3	H	4-CN	H	
258	H	H	H	CH_2CH_3	CH_3;	CH_2CH_3	H	4-CN	H	
259	H	H	H	CH_2CH_3	H	H	H	3-F; 4-CN	H	
260	H	H	H	CH_2CH_3	H	H	H	3-Cl; 4-CN	H	
261	H	H	H	CH_2CH_3	H	H	H	2-F; 4-CN	H	
262	H	H	H	CH_2CH_3	H	H	H	2-Cl; 4-CN	H	
263	H	H	H	CH_3	H	H	H	3-F; 4-CN	H	
264	H	H	H	CH_3	H	H	H	3-Cl; 4-CN	H	
265	H	H	H	CH_3	H	H	H	2-F; 4-CN	H	
266	H	H	H	CH_3	H	H	H	2-Cl; 4-CN	H	
267	H	H	H	$(CH_2)_2CH_3$	H	H	H	4-CN	H	
268	H	H	H	$CH_2(CH_3)_2$	H	H	H	4-CN	H	
269	H	H	H	CH_2F	H	H	H	4-CN	H	
270	H	H	H	CH_3	H	H	H	2-CH_3; 4-CN	H	
271	H	H	H	CH_3	H	H	H	H		137-138
273	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	H		
274	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H		

275	H	H	H	CH_3	H	H	4-F	H	(4)- 	
276	CH_3	H	H	CH_3	H	H	H	H	(4)- 	
277	H	H	H	CH_2CH_3	H	H	H	H	(4)- 	88-89
278	H	H	H	$CH_2CH_2CH_3$	H	H	H	H	(4)- 	
279	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	H	(4)- 	
280	H	H	H	CH_2CH_3	CH_3	H	H	H	(4)- 	
281	H	H	H	CH_2CH_3	CH_3	CH_3	H	H	(4)- 	
282	H	H	H	CH_3	H	H	4-Cl	H	(4)- 	
283	H	H	H	CH_3	H	H	H	4-$SOCH_3$	H	160-162
284	H	H	H	CH_2CH_3	H	H	H	H	(4)- 	88-91

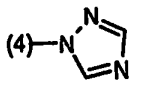
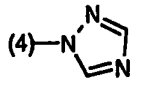
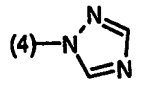
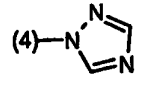
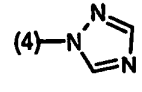
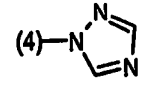
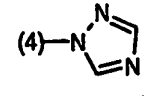
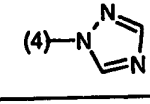
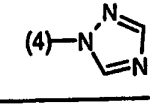
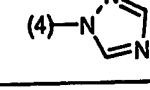
285	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	H		
286	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H		
287	CH_3	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H		
288	H	H	H	CH_2CH_3	H	H	H	4-OCH_2CH_3	H	85-86
289	H	H	H	CH_3	H	H	H	4-OCH_2CH_3	H	84-85
290	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	4-OCH_2CH_3	H	
291	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	4-OCH_2CH_3	H	
292	H	H	H	CH_2CH_3	H	H	4-F	4-OCH_2CH_3	H	
293	H	H	H	CH_3	H	H	4-F	4-OCH_2CH_3	H	
294	CH_3	H	H	CH_2CH_3	H	H	4-F	4-OCH_2CH_3	H	
295	CH_3	H	H	CH_3	H	H	4-F	4-OCH_2CH_3	H	
296	CH_3	H	H	CH_2CH_3	H	H	H	4-OCH_2CH_3	H	
297	CH_3	H	H	CH_3	H	H	H	4-OCH_2CH_3	H	
298	CH_3	H	H	CH_2CH_3	H	H	H	4-OCH_2CH_3	H	
299	CH_3	H	H	CH_3	H	H	H	4-OCH_2CH_3	H	
300	CH_3	CH_3	H	CH_2CH_3	CH_3	H	H	4-OCH_2CH_3	H	
301	CH_3	CH_3	H	CH_3	CH_3	H	H	4-OCH_2CH_3	H	
302	H	H	H	CH_2CH_3	H	H	4-Cl	4-OCH_2CH_3	H	

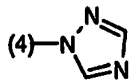
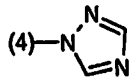
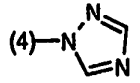
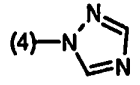
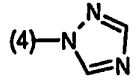
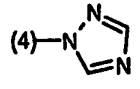
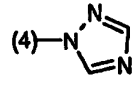
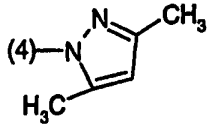
303	H	H	H	CH_3	H	H	4-Cl	4-OCH_2CH_3	H	
304	H	H	H	CH_2CH_3	H	H	2-F	4-OCH_2CH_3	H	
305	H	H	H	CH_3	H	H	2-F	4-OCH_2CH_3	H	
306	H	H	H	CH_2CH_3	H	H	2,4-F_2	4-OCH_2CH_3	H	
307	H	H	H	CH_3	H	H	2,4-F_2	4-OCH_2CH_3	H	
308	H	H	H	CH_2CH_3	H	H	2,4-Cl_2	4-OCH_2CH_3	H	
309	H	H	H	CH_3	H	H	2,4-Cl_2	4-OCH_2CH_3	H	
310	H	H	H	CH_2CH_3	H	H	3,4-F_2	4-OCH_2CH_3	H	
311	H	H	H	CH_3	H	H	3,4-F_2	4-OCH_2CH_3	H	
312	H	H	H	CH_2CH_3	H	H	3,4-Cl_2	4-OCH_2CH_3	H	
313	H	H	H	CH_3	H	H	3,4-Cl_2	4-OCH_2CH_3	H	
314	H	H	H	CH_2CH_3	H	H	4-CH_3	4-OCH_2CH_3	H	
315	H	H	H	CH_3	H	H	4-CH_3	4-OCH_2CH_3	H	
316	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-OCH_2CH_3	H	
317	H	H	H	CH_3	CH_3	CH_3	H	4-OCH_2CH_3	H	
318	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	4-OCH_2CH_3	H	
319	H	H	H	CH_2CH_3	H	H	H	3-F; 4-OCH_2CH_3	H	
320	H	H	H	CH_2CH_3	H	H	H	3-Cl; 4-OCH_2CH_3	H	
321	H	H	H	CH_2CH_3	H	H	H	2-F; 4-OCH_2CH_3	H	
322	H	H	H	CH_2CH_3	H	H	H	2-Cl; 4-OCH_2CH_3	H	
323	H	H	H	CH_3	H	H	H	3-F; 4-OCH_2CH_3	H	
324	H	H	H	CH_3	H	H	H	3-Cl; 4-OCH_2CH_3	H	

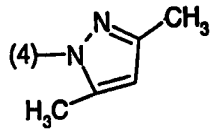
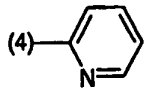
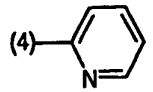
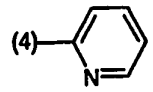
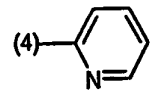
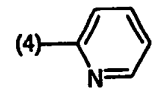
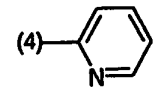
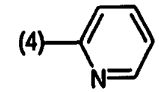
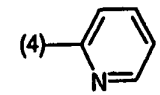
325	H	H	H	CH_3	H	H	H	2-F; 4-OCH_2CH_3	H	
326	H	H	H	CH_3	H	H	H	2-Cl; 4-OCH_2CH_3	H	
327	H	H	H	$(CH_2)_2CH_3$	H	H	H	4-OCH_2CH_3	H	
328	H	H	H	$CH_2(CH_3)_2$	H	H	H	4-OCH_2CH_3	H	
329	H	H	H	CH_2F	H	H	H	4-OCH_2CH_3	H	
330	H	H	H	CH_3	CH_2CH_3	CH_2CH_3	H	4-OCH_2CH_3	H	
331	H	H	H	CH_2CH_3	H	H	H	H		oil
332	H	H	H	CH_3	H	H	H	H		103-105
333	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	H		
334	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H		
335	H	H	H	CH_2CH_3	H	H	4-F	H		
336	H	H	H	CH_3	H	H	4-F	H		
337	CH_3	H	H	CH_2CH_3	H	H	4-F	H		

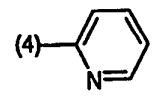
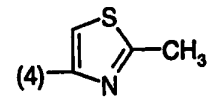
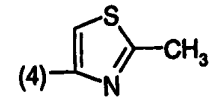
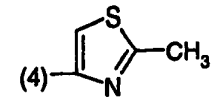
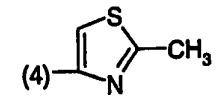
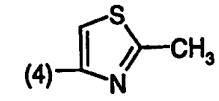
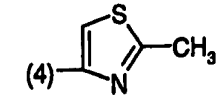
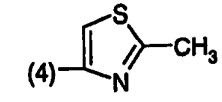
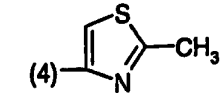
338	CH_3	H	H	CH_3	H	H	4-F	H		
339	CH_3	H	H	CH_2CH_3	H	H	H	H		
340	CH_3	H	H	CH_3	H	H	H	H		
341	CH_3	H	H	CH_2CH_3	H	H	H	H		
342	CH_3	H	H	CH_3	H	H	H	H		
343	CH_3	CH_3	H	CH_2CH_3	CH_3	H	H	H		
344	CH_3	CH_3	H	CH_3	CH_3	H	H	H		
345	H		H	CH_2CH_3	H	H	4-Cl	H		
346	H	H	H	CH_3	H	H	4-Cl	H		
347	H	H	H	CH_2CH_3	H	H	2-F	H		

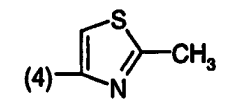
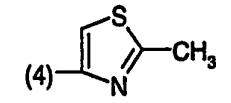
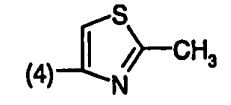
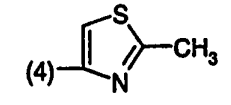
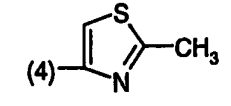
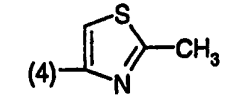
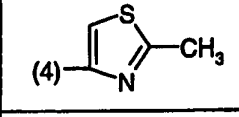
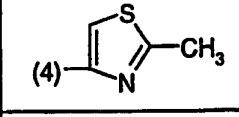
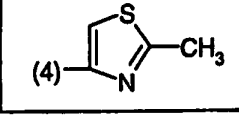
348	H	H	H	CH_3	H	H	2-F	H	(4)-N	
349	H	H	H	CH_2CH_3	H	H	2,4-F_2	H	(4)-N	
350	H	H	H	CH_3	H	H	2,4-F_2	H	(4)-N	
351	H	H	H	CH_2CH_3	H	H	2,4-Cl_2	H	(4)-N	
352	H	H	H	CH_3	H	H	2,4-Cl_2	H	(4)-N	
353	H	H	H	CH_2CH_3	H	H	3,4-F_2	H	(4)-N	
354	H	H	H	CH_3	H	H	3,4-F_2	H	(4)-N	
355	H	H	H	CH_2CH_3	H	H	3,4-Cl_2	H	(4)-N	
356	H	H	H	CH_3	H	H	3,4-Cl_2	H	(4)-N	
357	H	H	H	CH_2CH_3	H	H	4-CH_3	H	(4)-N	

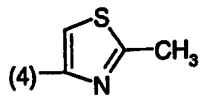
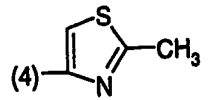
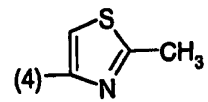
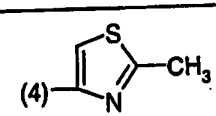
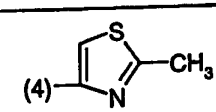
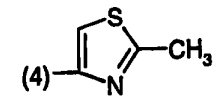
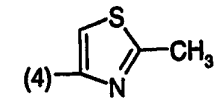
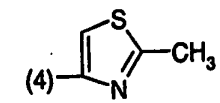
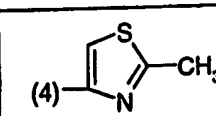
358	H	H	H	CH_3	H	H	4-CH_3	H		
359	H	H	H	CH_2CH_3	CH_3	CH_3	H	H		
360	H	H	H	CH_3	CH_3	CH_3	H	H		
361	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	H		
362	H	H	H	CH_2CH_3	H	H	H	3-F		
363	H	H	H	CH_2CH_3	H	H	H	3-Cl		
364	H	H	H	CH_2CH_3	H	H	H	2-F		
365	H	H	H	CH_2CH_3	H	H	H	2-Cl		
366	H	H	H	CH_3	H	H	H	3-F		
367	H	H	H	CH_3	H	H	H	3-Cl		

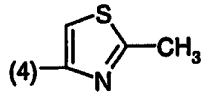
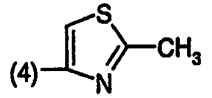
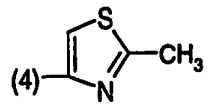
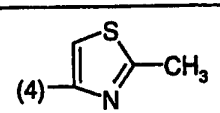
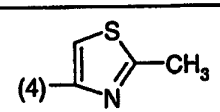
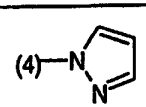
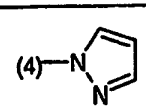
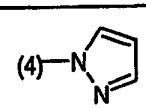
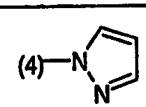
368	H	H	H	CH_3	H	H	H	2-F		
369	H	H	H	CH_3	H	H	H	2-Cl		
370	H	H	H	$(CH_2)_2CH_3$	H	H	H	H		
371	H	H	H	$CH_2(CH_3)_2$	H	H	H	H		
372	H	H	H	CH_2F	H	H	H	H		
373	H	H	CH_2-OCH_3	CH_3	H	H	H	H		
374	H	H	CH_2-OCH_3	CH_2CH_3	H	H	H	H		
375	H	H	H	CH_3	H	H	H	H	4-$COOCH_3$	133-134
376	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	H	4-$COOCH_3$	
377	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H	4-$COOCH_3$	
378	H	H	H	CH_3	H	H	H	H	4-COC_6H_5	solid
379	H	H	H	CH_2CH_3	H	H	H	H		oil

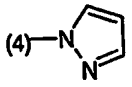
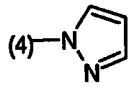
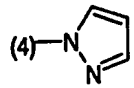
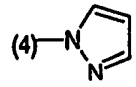
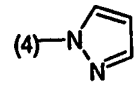
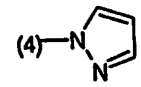
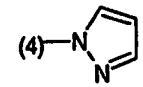
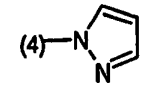
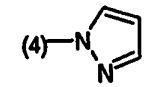
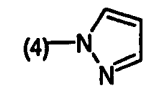
380	H	H	H	CH_3	H	H	H	H		
381	H	H	H	CH_2CH_3	H	H	H	H		124-125
382	H	H	H	CH_3	H	H	4-F	H		
383	CH_3	H	H	CH_3	H	H	H	H		
384	H	H	H	CH_3	H	H	H	H		
385	H	H	H	$CH_2CH_2CH_3$	H	H	H	H		
386	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	H		
387	H	H	H	CH_2CH_3	CH_3	H	H	H		
388	H	H	H	CH_2CH_3	CH_3	CH_3	H	H		

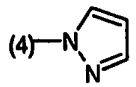
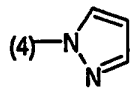
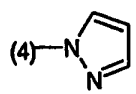
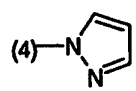
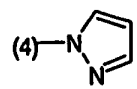
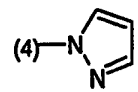
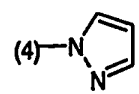
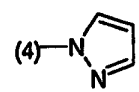
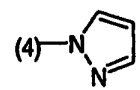
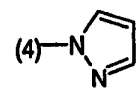
389	CH_3	H	H	CH_2CH_3	CH_3	CH_3	H	H		
390	H	H	H	CH_2CH_3	H	H	H	H		
391	H	H	H	CH_2CH_3	H	H	H	H		
392	H	H	H	CH_3	H	H	H	H		
393	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	H		
394	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H		
395	H	H	H	CH_2CH_3	H	H	4-F	H		
396	H	H	H	CH_3	H	H	4-F	H		
397	CH_3	H	H	CH_3	H	H	H	H		

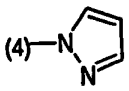
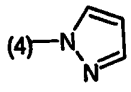
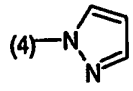
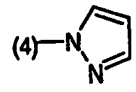
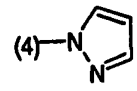
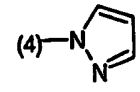
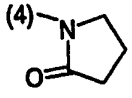
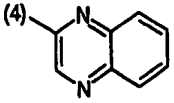
398	CH_3	H	H	CH_2CH_3	H	H	H	H		
399	H	H	H	CH_2CH_3	H	H	4-Cl	H		
400	H	H	H	CH_3	H	H	4-Cl	H		
401	H	H	H	CH_2CH_3	H	H	2-F	H		
402	H	H	H	CH_3	H	H	2-F	H		
403	H	H	H	CH_2CH_3	H	H	2,4-F_2	H		
404	H	H	H	CH_3	H	H	2,4-F_2	H		
405	H	H	H	CH_2CH_3	H	H	4-CH_3	H		
406	H	H	H	CH_3	H	H	4-CH_3	H		

407	H	H	H	CH_2CH_3	H	H	H	3-F		
408	H	H	H	CH_2CH_3	H	H	H	3-Cl		
409	H	H	H	CH_2CH_3	H	H	H	2-F		
410	H	H	H	CH_2CH_3	H	H	H	2-Cl		
411	H	H	H	CH_3	H	H	H	3-F		
412	H	H	H	CH_3	H	H	H	3-Cl		
413	H	H	H	CH_3	H	H	H	2-F		
414	H	H	H	CH_3	H	H	H	2-Cl		
415	H	H	H	$(CH_2)_2CH_3$	H	H	H	H		

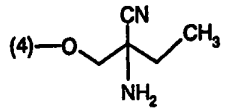
416	H	H	H	$CH_2(CH_3)_2$	H	H	H	H		
417	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	H		
418	H	H	H	CH_2CH_3	CH_3	H	H	H		
419	H	H	H	CH_2CH_3	CH_3	CH_3	H	H		
420	H	H	H	CH_2CH_3	CH_2CH_3	CH_2CH_3	H	H		
421	H	H	H	CH_2CH_3	H	H	H	H		solid
422	H	H	H	CH_3	H	H	H	H		solid
423	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	H		
424	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H		

425	H	H	H	CH_2CH_3	H	H	4-F	H	(4)- 	
426	H	H	H	CH_3	H	H	4-F	H	(4)- 	
427	CH_3	H	H	CH_3	H	H	H	H	(4)- 	
428	CH_3	H	H	CH_2CH_3	H	H	H	H	(4)- 	
429	H	H	H	CH_2CH_3	H	H	4-Cl	H	(4)- 	
430	H	H	H	CH_3	H	H	4-Cl	H	(4)- 	
431	H	H	H	CH_2CH_3	H	H	2-F	H	(4)- 	
432	H	H	H	CH_3	H	H	2-F	H	(4)- 	
433	H	H	H	CH_2CH_3	H	H	$2,4\text{-}F_2$	H	(4)- 	
434	H	H	H	CH_3	H	H	$2,4\text{-}F_2$	H	(4)- 	

435	H	H	H	CH_2CH_3	H	H	4-CH_3	H		
436	H	H	H	CH_3	H	H	4-CH_3	H		
437	H	H	H	CH_2CH_3	H	H	H	3-F		
438	H	H	H	CH_2CH_3	H	H	H	3-Cl		
439	H	H	H	CH_2CH_3	H	H	H	2-F		
440	H	H	H	CH_2CH_3	H	H	H	2-Cl		
441	H	H	H	CH_3	H	H	H	3-F		
442	H	H	H	CH_3	H	H	H	3-Cl		
443	H	H	H	CH_3	H	H	H	2-F		
444	H	H	H	CH_3	H	H	H	2-Cl		

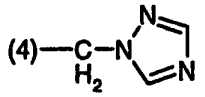
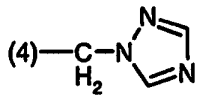
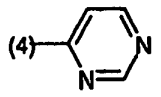
445	H	H	H	$(CH_2)_2CH_3$	H	H	H	H		
446	H	H	H	$CH_2(CH_3)_2$	H	H	H	H		
447	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	H		
448	H	H	H	CH_2CH_3	CH_3	H	H	H		
449	H	H	H	CH_2CH_3	CH_3	CH_3	H	H		
450	CH_3	CH_3	H	CH_2CH_3	H	H	H	H		
451	H	H	H	CH_3	H	H	H	4-$(COCH_2$-CH_2-CH_2-$CH_2)$-3		159-160
452	H	H	H	CH_2CH_3	H	H	H	H		136-137
453	H	H	H	CH_2CH_3	H	H	H	4-$(COCH_2$-CH_2-CH_2-$CH_2)$-3		117-119
454	H	H	H	CH_2CH_3	H	H	H	H	4-$CON(CH_3)_2$	148-149
455	H	H	H	CH_2CH_3	H	H	H	H		112-113
456	H	H	H	CH_3	H	H	H	4-$OCOCH_3$	H	143-145

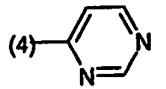
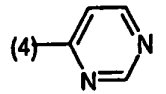
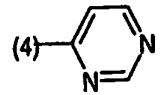
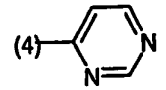
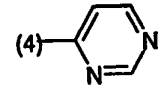
457	H	H	H	CH_3	H	H	H	4-OH	H	120-121
458	H	H	CH_3	CH_3	H	H	H	4-OH	H	resinous
459	H	H	H	CH_3	H	H	4-F	4-OH	H	
460	CH_3	H	H	CH_3	H	H	H	4-OH	H	
461	H	H	H	CH_2CH_3	H	H	H	4-OH	H	
462	H	H	H	$CH_2CH_2CH_3$	H	H	H	4-OH	H	
463	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	4-OH	H	
464	H	H	H	CH_2CH_3	CH_3	H	H	4-OH	H	
465	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-OH	H	
466	CH_3	CH_3	H	CH_2CH_3	H	H	H	4-OH	H	
467	H	H	H	CH_2CH_3	H	H	H	4-($C(CH_3)$=C-C(O)-O)-3		190-191
468	H	H	H	CH_2CH_3	H	H	H	4-(CH=CH-C(O)-O)-3		131-132
469	H	H	H	CH_2CH_3	H	H	H	4-$OCH(CH_3)_2$	H	98-99
470	H	H	H	CH_3	H	H	4-F	4-$OCH(CH_3)_2$	H	
471	CH_3	H	H	CH_3	H	H	H	4-$OCH(CH_3)_2$	H	
472	H	H	H	CH_3	H	H	H	4-$OCH(CH_3)_2$	H	
473	H	H	H	$CH_2CH_2CH_3$	H	H	H	4-$OCH(CH_3)_2$	H	
474	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	4-$OCH(CH_3)_2$	H	
475	H	H	H	CH_2CH_3	CH_3	H	H	4-$OCH(CH_3)_2$	H	
476	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-$OCH(CH_3)_2$	H	
477	CH_3	CH_3	H	CH_3	H	H	H	4-$OCH(CH_3)_2$	H	

478	H	H	H	CH_2CH_3	H	H	H		H	108-109
479	H	H	H	CH_2CH_3	H	H	H	4-NO_2	H	glass
480	H	H	H	CH_2CH_3	H	H	H	4-NH_2	H	153-154
481	H	H	H	CH_3	H	H	H	4-NH_2	H	
482	H	H	H	CH_3	H	H	4-F	4-NH_2	H	
483	CH_3	H	H	CH_3	H	H	H	4-NH_2	H	
484	H	H	H	$CH_2CH_2CH_3$	H	H	H	4-NH_2	H	
485	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	4-NH_2	H	
486	H	H	H	CH_2CH_3	CH_3	H	H	4-NH_2	H	
487	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-NH_2	H	
488	CH_3	H	H	CH_2CH_3	H	H	H	4-NH_2	H	
489	H	H	H	CH_2CH_3	H	H	H	4-I	H	resinous
490	H	H	H	CH_3	H	H	H	4-I	H	
491	H	H	H	CH_3	H	H	4-F	4-I	H	
492	CH_3	H	H	CH_3	H	H	H	4-I	H	
493	H	H	H	$CH(CH_3)_2$	H	H	H	4-I	H	
494	H	H	H	$CH_2CH_2CH_3$	H	H	H	4-I	H	
495	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	4-I	H	
496	H	H	H	CH_2CH_3	CH_3	H	H	4-I	H	
497	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-I	H	

498	H	H	H	CH_2F	H	H	H	4-I	H	
499	H	H	H	CH_2CH_3	H	H	H	4-Br	H	
500	H	H	H	CH_3	H	H	H	4-Br	H	
501	H	H	H	CH_3	H	H	4-F	4-Br	H	
502	CH_3	H	H	CH_3	H	H	H	4-Br	H	
503	H	H	H	$CH(CH_3)_2$	H	H	H	4-Br	H	
504	H	H	H	$CH_2CH_2CH_3$	H	H	H	4-Br	H	
505	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	4-Br	H	
506	H	H	H	CH_2CH_3	CH_3	H	H	4-Br	H	
507	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-Br	H	
508	H	H	H	CH_2F	H	H	H	4-Br	H	
509	H	H	H	CH_3	H	H	H	4-$CH(CH_3)_2$	H	resinous
510	H	H	H	CH_2CH_3	H	H	H	4-$OCH_2C_6H_5$	H	resinous
511	H	H	H	CH_3	H	H	H	4-$OCH_2C_6H_5$	H	
512	H	H	H	CH_3	H	H	H	3-F	4-$COCH_2CH_3$	103-104
513	H	H	H	CH_2CH_3	H	H	H	3-F	4-$COCH_2CH_3$	114-118
514	H	H	H	CH_2CH_3	H	H	H	H	4-$COCH_2CH_3$	oil
515	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	H	4-$COCH_2CH_3$	
516	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H	4-$COCH_2CH_3$	
517	H	H	H	CH_3	H	H	H	H	4-COCH2CH3	124-126
518	H	H	H	CH_2CH_3	H	H	4-F	H	4-$COCH_2CH_3$	
519	H	H	H	CH_3	H	H	4-F	H	4-$COCH_2CH_3$	

520	CH_3	H	H	CH_2CH_3	H	H	4-F	H	4-$COCH_2CH_3$	
521	CH_3	H	H	CH_3	H	H	4-F	H	4-$COCH_2CH_3$	
522	CH_3	H	H	CH_2CH_3	H	H	H	H	4-$COCH_2CH_3$	
523	CH_3	H	H	CH_3	H	H	H	H	4-$COCH_2CH_3$	
524	CH_3	H	H	CH_2CH_3	H	H	H	H	4-$COCH_2CH_3$	
525	CH_3	H	H	CH_3	H	H	H	H	4-$COCH_2CH_3$	
526	CH_3	CH_3	H	CH_2CH_3	CH_3	H	H	H	4-$COCH_2CH_3$	
527	CH_3	CH_3	H	CH_3	CH_3	H	H	H	4-$COCH_2CH_3$	
528	H	H	H	CH_2CH_3	H	H	4-Cl	H	4-$COCH_2CH_3$	
529	H	H	H	CH_3	H	H	4-Cl	H	4-$COCH_2CH_3$	
530	H	H	H	CH_2CH_3	H	H	2-F	H	4-$COCH_2CH_3$	
531	H	H	H	CH_3	H	H	2-F	H	4-$COCH_2CH_3$	
532	H	H	H	CH_2CH_3	H	H	2,4-F_2	H	4-$COCH_2CH_3$	
533	H	H	H	CH_3	H	H	2,4-F_2	H	4-$COCH_2CH_3$	
534	H	H	H	CH_2CH_3	H	H	2,4-Cl_2	H	4-$COCH_2CH_3$	
535	H	H	H	CH_3	H	H	2,4-Cl_2	H	4-$COCH_2CH_3$	
536	H	H	H	CH_2CH_3	H	H	3,4-F_2	H	4-$COCH_2CH_3$	
537	H	H	H	CH_3	H	H	3,4-F_2	H	4-$COCH_2CH_3$	
538	H	H	H	CH_2CH_3	H	H	3,4-Cl_2	H	4-$COCH_2CH_3$	
539	H	H	H	CH_3	H	H	3,4-Cl_2	H	4-$COCH_2CH_3$	
540	H	H	H	CH_2CH_3	H	H	4-CH_3	H	4-$COCH_2CH_3$	
541	H	H	H	CH_3	H	H	4-CH_3	H	4-$COCH_2CH_3$	

542	H	H	H	CH_2CH_3	CH_3	CH_3	H	H	4-$COCH_2CH_3$	
543	H	H	H	CH_3	CH_3	CH_3	H	H	4-$COCH_2CH_3$	
544	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	H	4-$COCH_2CH_3$	
545	H	H	H	CH_2CH_3	H	H	H	3-F	4-$COCH_2CH_3$	
546	H	H	H	CH_2CH_3	H	H	H	3-Cl	4-$COCH_2CH_3$	
547	H	H	H	CH_2CH_3	H	H	H	2-F	4-$COCH_2CH_3$	
548	H	H	H	CH_2CH_3	H	H	H	2-Cl	4-$COCH_2CH_3$	
549	H	H	H	CH_3	H	H	H	3-F	4-$COCH_2CH_3$	
550	H	H	H	CH_3	H	H	H	3-Cl	4-$COCH_2CH_3$	
551	H	H	H	CH_3	H	H	H	2-F	4-$COCH_2CH_3$	
552	H	H	H	CH_3	H	H	H	2-Cl	4-$COCH_2CH_3$	
553	H	H	H	$(CH_2)_2CH_3$	H	H	H	H	4-$COCH_2CH_3$	
554	H	H	H	$CH_2(CH_3)_2$	H	H	H	H	4-$COCH_2CH_3$	
555	H	H	H	CH_2F	H	H	H	H	4-$COCH_2CH_3$	
556	H	H	H	CH_3	H	H	H	H		
557	H	H	H	CH_2CH_3	H	H	H	H		solid
558	H	H	H	CH_2CH_3	H	H	H	H		solid

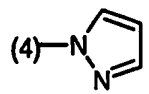
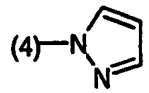
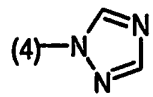
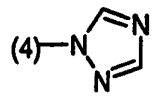
559	H	H	H	CH_3	H	H	4-F	H		
560	CH_3	H	H	CH_3	H	H	H	H		
561	H	H	H	CH_3	H	H	H	H		
562	H	H	H	$CH_2CH_2CH_3$	H	H	H	H		
563	H	H	H	CH_2 $CH_2CH_2CH_3$	H	H	H	H		
564	H	H	H	CH_2CH_3	H	H	H	H	4-COCH3	oil
565	H	H	H	CH_3	CH_3	H	H	H	4-$COCH_3$	oil
566	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	H	4-$COCH_3$	
567	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H	4-$COCH_3$	
568	H	H	H	CH_3	H	H	H	H	4-$COCH_3$	143-144
569	H	H	H	CH_2CH_3	H	H	4-F	H	4-$COCH_3$	
570	H	H	H	CH_3	H	H	4-F	H	4-$COCH_3$	
571	CH_3	H	H	CH_2CH_3	H	H	4-F	H	4-$COCH_3$	
572	CH_3	H	H	CH_3	H	H	4-F	H	4-$COCH_3$	
573	CH_3	H	H	CH_2CH_3	H	H	H	H	4-$COCH_3$	

574	CH_3	H	H	CH_3	H	H	H	H	4-$COCH_3$	
575	CH_3	H	H	CH_2CH_3	H	H	H	H	4-$COCH_3$	
576	CH_3	H	H	CH_3	H	H	H	H	4-$COCH_3$	
577	CH_3	CH_3	H	CH_2CH_3	CH_3	H	H	H	4-$COCH_3$	
578	CH_3	CH_3	H	CH_3	CH_3	H	H	H	4-$COCH_3$	
579	H	H	H	CH_2CH_3	H	H	4-Cl	H	4-$COCH_3$	
580	H	H	H	CH_3	H	H	4-Cl	H	4-$COCH_3$	
581	H	H	H	CH_2CH_3	H	H	2-F	H	4-$COCH_3$	
582	H	H	H	CH_3	H	H	2-F	H	4-$COCH_3$	
583	H	H	H	CH_2CH_3	H	H	2,4-F_2	H	4-$COCH_3$	
584	H	H	H	CH_3	H	H	2,4-F_2	H	4-$COCH_3$	
585	H	H	H	CH_2CH_3	H	H	2,4-Cl_2	H	4-$COCH_3$	
586	H	H	H	CH_3	H	H	2,4-Cl_2	H	4-$COCH_3$	
587	H	H	H	CH_2CH_3	H	H	3,4-F_2	H	4-$COCH_3$	
588	H	H	H	CH_3	H	H	3,4-F_2	H	4-$COCH_3$	
589	H	H	H	CH_2CH_3	H	H	3,4-Cl_2	H	4-$COCH_3$	
590	H	H	H	CH_3	H	H	3,4-Cl_2	H	4-$COCH_3$	
591	H	H	H	CH_2CH_3	H	H	4-CH_3	H	4-$COCH_3$	
592	H	H	H	CH_3	H	H	4-CH_3	H	4-$COCH_3$	
593	H	H	H	CH_2CH_3	CH_3	CH_3	H	H	4-$COCH_3$	
594	H	H	H	CH_3	CH_3	CH_3	H	H	4-$COCH_3$	
595	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	H	4-$COCH_3$	

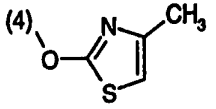
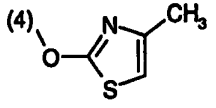
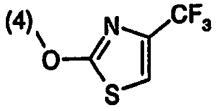
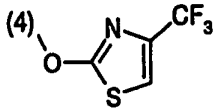
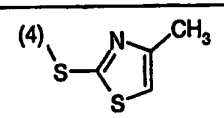
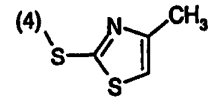
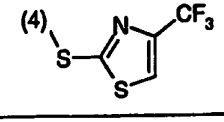
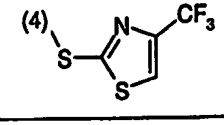
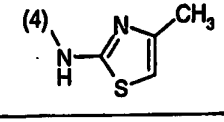
596	H	H	H	CH_2CH_3	H	H	H	3-F	4-$COCH_3$	
597	H	H	H	CH_2CH_3	H	H	H	3-Cl	4-$COCH_3$	
598	H	H	H	CH_2CH_3	H	H	H	2-F	4-$COCH_3$	
599	H	H	H	CH_2CH_3	H	H	H	2-Cl	4-$COCH_3$	
600	H	H	H	CH_3	H	H	H	3-F	4-$COCH_3$	
601	H	H	H	CH_3	H	H	H	3-Cl	4-$COCH_3$	
602	H	H	H	CH_3	H	H	H	2-F	4-$COCH_3$	
603	H	H	H	CH_3	H	H	H	2-Cl	4-$COCH_3$	
604	H	H	H	$(CH_2)_2CH_3$	H	H	H	H	4-$COCH_3$	
605	H	H	H	$CH_2(CH_3)_2$	H	H	H	H	4-$COCH_3$	
606	H	H	H	CH_2F	H	H	H	H	4-$COCH_3$	
607	H	H	H	CH_3	H	H	H	H	-4-$COCH_3$	152-153 n_D^{20} = +10.7° ($CHCl_3$ c 1,34)
608	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	H	-4-$COCH_3$	
609	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H	-4-$COCH_3$	
610	H	H	H	CH_3	H	H	H	H	-4-$COCH_3$	152-153 n_D^{20} = -10.7° ($CHCl_3$ c 1,34)
611	H	H	CH_2-OCH_2CH_3	CH_3	H	H	H	H	-4-$COCH_3$	
612	H	H	CH_2-OCH_2CH_3	CH_2CH_3	H	H	H	H	-4-$COCH_3$	
613	H	H	H	CH_3	CH_2CH_3	CH_2CH_3	H	H	4-$COCH_3$	
614	H	H	H	CH_3	H	H	4-F	3,4-$(OCH_3)_2$	H	

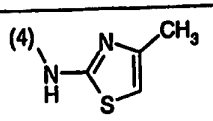
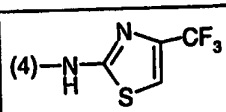
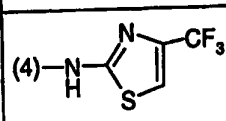
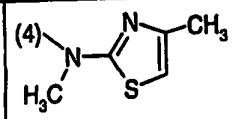
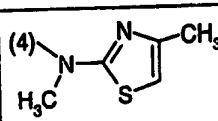
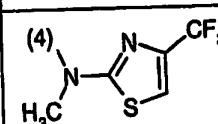
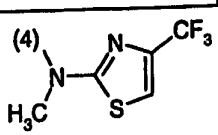
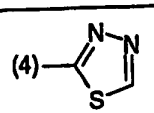
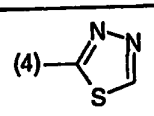
615	CH_3	H	H	CH_3	H	H	H	3,4-$(OCH_3)_2$	H	
616	H	H	H	CH_3	H	H	4-F	3,4-$(OCH_3)_2$	H	
617	H	H	H	CH_2CH_3	H	H	H	3,4-$(OCH_3)_2$	H	
618	H	H	H	$CH_2CH_2CH_3$	H	H	H	3,4-$(OCH_3)_2$	H	
619	H	H	H	CH_2CH_3	CH_3	H	H	3,4-$(OCH_3)_2$	H	
620	H	H	H	CH_2CH_3	CH_3	CH_3	H	3,4-$(OCH_3)_2$	H	
621	H	H	H	CH_3	H	H	4-F	3-OCH_3; 4-$OCH_2CH=CH_2$	H	
623	CH_3	H	H	CH_3	H	H	H	3-OCH_3; 4-$OCH_2CH=CH_2$	H	
624	H	H	H	CH_3	H	H	4-F	3-OCH_3; 4-$OCH_2CH=CH_2$	H	
625	H	H	H	CH_2CH_3	H	H	H	3-OCH_3; 4-$OCH_2CH=CH_2$	H	
626	H	H	H	$CH_2CH_2CH_3$	H	H	H	3-OCH_3; 4-$OCH_2CH=CH_2$	H	
627	H	H	H	CH_2CH_3	CH_3	H	H	3-OCH_3; 4-$OCH_2CH=CH_2$	H	
628	H	H	H	CH_2CH_3	CH_3	CH_3	H	3-OCH_3; 4-$OCH_2CH=CH_2$	H	
629	H	H	H	CH_3	CH_3	H	H	3-OCH_3; 4-$OCH_2CH=CH_2$	H	
630	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	3-OCH_3; 4-$OCH_2CH=CH_2$	H	
631	H	H	H	CH_3	H	H	4-F	3-OCH_3; 4-$OCH_2C\equiv CH$	H	

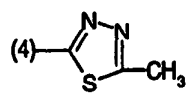
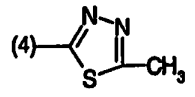
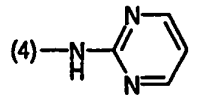
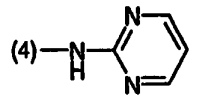
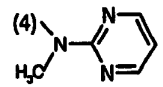
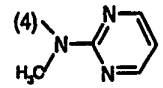
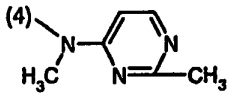
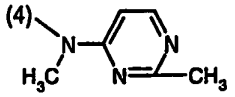
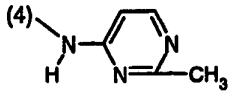
632	CH_3	H	H	CH_3	H	H	H	3-OCH_3; 4-$OCH_2C{\equiv}CH$	H	
633	H	H	H	CH_3	H	H	4-F	3-OCH_3; 4-$OCH_2C{\equiv}CH$	H	
634	H	H	H	CH_2CH_3	H	H	H	3-OCH_3; 4-$OCH_2C{\equiv}CH$	H	
635	H	H	H	$CH_2CH_2CH_3$	H	H	H	3-OCH_3; 4-$OCH_2C{\equiv}CH$	H	
636	H	H	H	CH_2CH_3	CH_3	H	H	3-OCH_3; 4-$OCH_2C{\equiv}CH$	H	
637	H	H	H	CH_2CH_3	CH_3	CH_3	H	3-OCH_3; 4-$OCH_2C{\equiv}CH$	H	
638	H	H	H	CH_3	CH_3	H	H	3-OCH_3; 4-$OCH_2C{\equiv}CH$	H	
639	H	H	H	CH_2CH_3	CH_3;	CH_2CH_3	H	3-OCH_3; 4-$OCH_2C{\equiv}CH$	H	
640	H	H	H	CH_3	H	H	4-F	4-$OCH_2C{\equiv}CH$	H	
641	CH_3	H	H	CH_3	H	H	H	4-$OCH_2C{\equiv}CH$	H	
642	H	H	H	CH_3	H	H	4-F	4-$OCH_2C{\equiv}CH$	H	
643	H	H	H	CH_2CH_3	H	H	H	4-$OCH_2C{\equiv}CH$	H	
644	H	H	H	$CH_2CH_2CH_3$	H	H	H	4-$OCH_2C{\equiv}CH$	H	
645	H	H	H	CH_2CH_3	CH_3	H	H	4-$OCH_2C{\equiv}CH$	H	
646	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-$OCH_2C{\equiv}CH$	H	
647	H	H	H	CH_3	CH_3	H	H	4-$OCH_2C{\equiv}CH$	H	

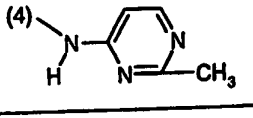
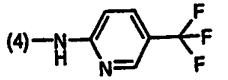
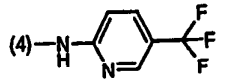
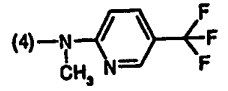
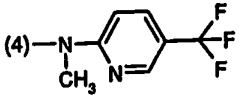
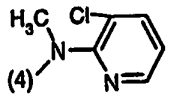
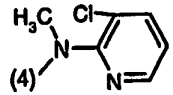
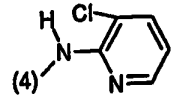
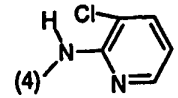
648	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	4-$OCH_2C{\equiv}CH$	H	
649	H	H	H	CH_3	H	H	4-F	4-$OCH_2CH{=}CH_2$	H	
650	CH_3	H	H	CH_3	H	H	H	4-$OCH_2CH{=}CH_2$	H	
651	H	H	H	CH_3	H	H	4-F	4-$OCH_2CH{=}CH_2$	H	
652	H	H	H	CH_2CH_3	H	H	H	4-$OCH_2CH{=}CH_2$	H	
653	H	H	H	$CH_2CH_2CH_3$	H	H	H	4-$OCH_2CH{=}CH_2$	H	
654	H	H	H	CH_2CH_3	CH_3	H	H	4-$OCH_2CH{=}CH_2$	H	
655	H	H	H	CH_2CH_3	CH_3	CH_3	H	4-$OCH_2CH{=}CH_2$	H	
656	H	H	H	CH_3	CH_3	H	H	4-$OCH_2CH{=}CH_2$	H	
657	H	H	H	CH_2CH_3	CH_3	CH_2CH_3	H	4-$OCH_2CH{=}CH_2$	H	
658	H	H	H	CH_2CH_3	H	H	H	2-Cl		(-) isomer
659	H	H	H	CH_3	H	H	H	3-F		(+)-isomer
660	H	H	H	CH_2CH_3	H	H	H	H		(-) isomer
661	H	H	H	CH_2CH_3	H	H	H	H		(+)-isomer

662	H	H	H	CH_3	H	H	H	H	(4)-1,2,4-triazol-1-yl	(+)-isomer
662	H	H	H	CH_3	H	H	H	H	(4)-1,2,4-triazol-1-yl	(-) isomer
663	H	H	H	CH_2CH_3	H	H	H	4-OCH_2CH_3	H	(-) isomer
664	H	H	H	CH_2CH_3	H	H	H	4-OCH_2CH_3	H	(+)-isomer
665	H	H	H	CH_3	H	H	H	4-OCH_2CH_3	H	(-)-isomer
666	H	H	H	CH_3	H	H	H	4-OCH_2CH_3	H	(+)-isomer
667	H	H	H	CH_2CH_3	H	H	H	H	(4)-2-methylthiazol-1-yl	(-)-isomer
668	H	H	H	CH_3	H	H	H	H	(4)-2-methylthiazol-1-yl	(-)-isomer
669	H	H	H	CH_3	H	H	H	H	(4)-1,3,4-oxadiazol-1-yl	(-)-isomer
670	H	H	H	CH_2CH_3	H	H	H	4-CN	H	(-)-isomer
671	H	H	H	CH_3	H	H	H	4-CN	H	(-)-isomer
672	H	H	H	CH_2CH_3	H	H	H	4-CN	H	(+)-isomer
673	H	H	H	CH_3	H	H	H	4-CN	H	(+)-isomer
674	H	H	H	CH_2CH_3	H	H	H	4-Cl	H	(-)-isomer
675	H	H	H	CH_2CH_3	H	H	H	4-Cl	H	(+)-isomer

676	H	H	H	CH_3	H	H	H	H		
678	H	H	H	CH_2CH_3	H	H	H	H		
679	H	H	H	CH_3	H	H	H	H		
680	H	H	H	CH_2CH_3	H	H	H	H		
681	H	H	H	CH_3	H	H	H	H		
682	H	H	H	CH_2CH_3	H	H	H	H		
683	H	H	H	CH_3	H	H	H	H		
684	H	H	H	CH_2CH_3	H	H	H	H		
685	H	H	H	CH_3	H	H	H	H		

687	H	H	H	CH_2CH_3	H	H	H	H		
688	H	H	H	CH_3	H	H	H	H		
689	H	H	H	CH_2CH_3	H	H	H	H		
690	H	H	H	CH_3	H	H	H	H		
691	H	H	H	CH_2CH_3	H	H	H	H		
692	H	H	H	CH_3	H	H	H	H		
693	H	H	H	CH_2CH_3	H	H	H	H		
694	H	H	H	CH_3	H	H	H	H		
695	H	H	H	CH_2CH_3	H	H	H	H		

696	H	H	H	CH_3	H	H	H	H		
697	H	H	H	CH_2CH_3	H	H	H	H		
698	H	H	H	CH_3	H	H	H	H		
699	H	H	H	CH_2CH_3	H	H	H	H		
700	H	H	H	CH_3	H	H	H	H		
701	H	H	H	CH_2CH_3	H	H	H	H		
702	H	H	H	CH_3	H	H	H	H		
703	H	H	H	CH_2CH_3	H	H	H	H		
704	H	H	H	CH_3	H	H	H	H		

705	H	H	H	CH_2CH_3	H	H	H	H		
706	H	H	H	CH_3	H	H	H	H		
708	H	H	H	CH_2CH_3	H	H	H	H		
709	H	H	H	CH_3	H	H	H	H		
710	H	H	H	CH_2CH_3	H	H	H	H		
711	H	H	H	CH_3	H	H	H	H		
712	H	H	H	CH_2CH_3	H	H	H	H		
713	H	H	H	CH_3	H	H	H	H		
714	H	H	H	CH_2CH_3	H	H	H	H		

Formulations may be prepared analogously to those described in, for example, WO 95/30651.

Biological Examples

D-1: Action against Plasmopara viticola on vines

a) Residual-protective action

Vine seedlings are sprayed at the 4- to 5-leaf stage with a spray mixture (0.02 % active ingredient) prepared from a wettable powder formulation of the test compound. After 24 hours, the treated plants are infected with a sporangia suspension of the fungus. Fungus infestation is evaluated after incubation for 6 days at 95-100 % relative humidity and +20°C.

b) Residual-curative action

Vine seedlings are infected at the 4- to 5-leaf stage with a sporangia suspension of the fungus. After incubation for 24 hours in a humidity chamber at 95-100 % relative humidity and +20°C, the infected plants are dried and sprayed with a spray mixture (0.02 % active ingredient) prepared from a wettable powder formulation of the test compound. After the spray coating has dried, the treated plants are placed in the humidity chamber again. Fungus infestation is evaluated 6 days after infection.

Compounds of Tables 1 exhibit a good fungicidal action against Plasmopara viticola on vines. Compounds No. 040, 052, 059, 071, 091, 101, 102, 104, 105, 157, 186, 197, 220, 228, 229, 271, 288, 289, 331, 332, 378, 381, 391, 421, 422, 452, 453, 469, 479, 489, 499, 512, 513, 514, 517, 464, 568 and 607 at 200 ppm inhibit fungal infestations in both tests D-1a) and D-1b) by 80 – 100 %. At the same time untreated plants showed pathogen attack of 60 – 100 %.

D-2: Action against Phytophthora on tomato plants

a) Residual-protective action

After a cultivation period of 3 weeks, tomato plants are sprayed with a spray mixture (0.02 % active ingredient) prepared from a wettable powder formulation of the test compound. After 48 hours, the treated plants are infected with a sporangia suspension of the fungus. Fungus infestation is evaluated after incubation of the infected plants for 5 days at 90-100 % relative humidity and +20°C.

b) Systemic action

After a cultivation period of 3 weeks, tomato plants are watered with a spray mixture (0.02 % active ingredient based on the volume of the soil) prepared from a wettable powder formulation of the test compound. Care is taken that the spray mixture does not come into contact with the parts of the plants that are above the ground. After 96 hours, the treated plants are infected with a sporangia suspension of the fungus. Fungus infestation is evaluated after incubation of the infected plants for 4 days at 90-100 % relative humidity and +20°C. Compounds of Tables 1 exhibit a good fungicidal action against Plasmopara viticola on vines. Compounds No. 040, 052, 059, 071, 091, 101, 102, 104, 105, 157, 186, 197, 220, 228, 229, 271, 288, 289, 331, 332, 378, 381, 391, 421, 422, 452, 453, 469, 479, 489, 499, 512, 513, 514, 517, 464, 568 and 607 at 200 ppm inhibit fungal infestations in both tests D-1a) and D-1b) by 80 – 100 %. At the same time untreated plants showed pathogen attack of 60 – 100 %.

D-3 : Action against Phytophthora on potato plants

a) Residual-protective action

2-3 week old potato plants (Bintje variety) are sprayed with a spray mixture (0.02 % active ingredient) prepared from a wettable powder formulation of the test compound. After 48 hours, the treated plants are infected with a sporangia suspension of the fungus. Fungus infestation is evaluated after incubation of the infected plants for 4 days at 90-100 % relative humidity and +20°C.

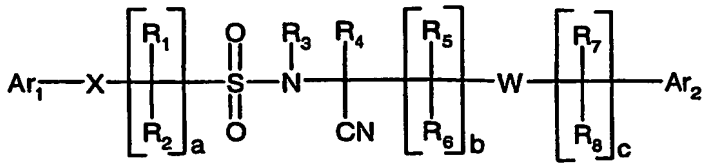
b) Systemic action

2-3 week old potato plants (Bintje variety) are watered with a spray mixture (0.02 % active ingredient based on the volume of the soil) prepared from a wettable powder formulation of the test compound. Care is taken that the spray mixture does not come into contact with the parts of the plants that are above the ground. After 48 hours, the treated plants are infected with a sporangia suspension of the fungus. Fungus infestation is evaluated after incubation of the infected plants for 4 days at 90-100 % relative humidity and +20°C. Fungal infestation is effectively controlled with compounds of Table 1.

Compounds 040, 052, 105, 157, 228, 229, 271, 288, 289, 332, 421, 422, 469, 479, 489, 514, 517, 564, 568 and 607 at 200 ppm inhibit fungal infestations in both tests D-3a) and D-3b) by 60 – 100 %. At the same time untreated plants showed a pathogen attack of 60 - 100 %.

What is claimed is:

1. A compound of the general formula



(I)

including the optical isomers thereof and mixtures of such isomers, wherein

Ar_1 and Ar_2 independently of each other stand for an optionally substituted aryl or heteroaryl group,

R_1 and R_2 stand independently of each other for hydrogen, optionally substituted C_1-C_5alkyl, optionally substituted C_2-C_5alkenyl, C_2-C_5alkynyl or optionally substituted C_3–C_6cycloalkyl;

R_3 designates hydrogen, C_3-C_5alkenyl, C_3-C_5alkynyl or optionally substituted C_1-C_5alkyl;

R_4 is optionally substituted C_1-C_5alkyl, optionally substituted C_2-C_5alkenyl, C_2-C_5alkynyl or optionally substituted C_3–C_6cycloalkyl;

R_5 and R_6 are independently of each other hydrogen or optionally substituted C_1-C_5alkyl, optionally substituted C_2-C_5alkenyl, C_2-C_5alkynyl or optionally substituted C_3–C_6cycloalkyl;

R_7 and R_8 are independently of each other hydrogen or optionally substituted C_1-C_5alkyl, optionally substituted C_2-C_5alkenyl, C_2-C_5alkynyl or optionally substituted C_3–C_6cycloalkyl;

W designates a bridge selected from –O-, $-S(O)_m-$ or $-NR_3-$;

X designates a direct bond or a bridge selected from –O-, $-S(O)_m-$ or $-NR_3-$;

a and b independently of each other stand for a number 1, 2 or 3; and

c and m independently of each other stand for a number zero, 1 or 2.

2. A compound according to claim 1 wherein

Ar_1 stands for an aryl group which is optionally substituted with n radicals independently selected from R_9 ; or stands for a 5-ring-membered heteroaryl group comprising as ring members 1 to 4 heteroatoms selected from nitrogen, oxygen or sulfur and being optionally substituted with n radicals independently selected from R_{11} ; or stands for a 6-ring-membered heteroaryl group comprising as ring members 1 to 4 heteroatoms selected from nitrogen, oxygen or sulfur and being optionally substituted with n radicals independently selected from R_{11} ;

Ar_2 stands for an aryl group which is optionally substituted with n radicals independently

selected from R'_9 and from one radical R_{10}; or stands for a 5-ring-membered heteroaryl group comprising as ring members 1 to 4 heteroatoms selected from nitrogen, oxygen or sulfur and being optionally substituted with n radicals independently selected from R_{11} ; or stands for a 6-ring- membered heteroaryl group comprising as ring members 1 to 4 heteroatoms selected from nitrogen, oxygen or sulfur, and being optionally substituted with n radicals independently selected from R_{11} ; or stands for a fused bicyclic heteroaryl group comprising as ring members 1 to 4 heteroatoms selected from nitrogen, oxygen or sulfur, and being composed from the 5-ring- or 6-ring-membered heteroaryl groups as defined for Ar_2 with an annellated phenyl ring or with an annellated second 6-ring-membered heteroaryl, each ring and the bicyclic heteroaryl being optionally substituted with n radicals independently selected from R_{11} ;

R_1 and R_2 stand independently of each other for hydrogen or C_1-C_5alkyl optionally substituted by halogen, C_1–C_3alkoxy or -$NR_{12}R_{13}$; or stand for C_2-C_5alkenyl optionally substituted by halogen or C_1-C_3alkoxy; or stand for C_2-C_5alkynyl; or stand for C_3-C_6cycloalkyl optionally substituted by halogen, C_1-C_3alkoxy; C_1–C_3alkyl or -$NR_{12}R_{13}$;

R_3 designates hydrogen, C_3-C_5alkenyl, C_3-C_5alkynyl or C_1-C_3alkyl optionally substituted by C_1–C_3alkoxy; C_3-C_5alkenyloxy or C_3-C_5alkynyloxy;

R_4 is C_1-C_5-alkyl optionally substituted by halogen, C_1–C_3alkoxy or -$NR_{12}R_{13}$; or is C_2-C_5alkenyl optionally substituted by halogen or C_1–C_3alkoxy; or is C_2-C_5alkynyl; or is C_3-C_6cycloalkyl optionally substituted by halogen, C_1–C_3alkoxy or C_1–C_3alkyl;

R_5 and R_6 are independently of each other hydrogen or C_1-C_5alkyl optionally substituted by halogen, C_1–C_3alkoxy or -$NR_{12}R_{13}$; or are C_2-C_5alkenyl optionally substituted by halogen or C_1-C_3alkoxy; or are C_2-C_5alkynyl; or are C_3–C_6cycloalkyl optionally substituted by halogen, C_1-C_3alkoxy; C_1–C_3alkyl or -$NR_{12}R_{13}$;

R_7 and R_8 are independently of each other hydrogen or C_1-C_5alkyl optionally substituted by halogen, C_1–C_3alkoxy or -$NR_{12}R_{13}$; or are C_2-C_5alkenyl optionally substituted by halogen or C_1-C_3alkoxy; or are C_2-C_5alkynyl; or are C_3–C_6cycloalkyl optionally substituted by halogen, C_1-C_3alkoxy; C_1–C_3alkyl or -$NR_{12}R_{13}$;

R_9 and R'_9 independently of each other stand for C_1-C_5alkyl optionally substituted by halogen, C_1–C_4alkoxy, -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14} , by a -X-aryl which is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2 , -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14}; by a -X-linked-5- or 6-ring-membered heteroaryl group optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2 , -$NR_{12}R_{13}$, -CO-R_{14} or the

acyclic or cyclic ketals and acetals of -CO-R_{14} ; or stand for C_3-C_6cycloalkyl, optionally substituted by halogen, hydroxy, =O, C_1-C_4alkoxy, $NR_{12}R_{13}$; or stand for C_1–C_4alkoxy optionally substituted by halogen, C_1-C_4alkoxy, by -X-aryl which is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2 , -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14} ; by a X-linked-5- or 6-ring-membered heteroaryl group optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2 , -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14}; or stand for C_2-C_5alkenyl optionally substituted by halogen or aryl; or stand for C_2-C_5alkynyl optionally substituted by halogen, tri-alkyl-silyl or aryl; or stand for C_2-C_5alkenyloxy optionally substituted by halogen or aryl; or stand for C_2-C_5alkynyloxy optionally substituted by halogen, tri-alkyl-silyl or aryl; or stand for C_3-C_6cycloalkoxy optionally substituted by C_1-C_3alkyl, halogen or C_1-C_4alkoxy; or stand for halogen; or stand for -$NR_{12}R_{13}$, or stand for -NR_2-CO-R_{12} ; or stand for –NR_2-CO-OR_{12} ; or stand for -NR_2-CO-NR_8R_9 ; or stand for -NR_2-CO-SR_{12} ; or stand for –NR_2-CS-OR_{12} ; or stand for -NR_2-CS-NR_8R_9 ; or stand for -NR_2-CS-SR_{12} ; or stand for –NR_2-C(=N-O-R_{12})-S-OR_{12} ; or stand for -NR_2-C(=N-O-R_{12})-NR_8R_9 ; or stand for -NR_2-C(=N-O-R_{12})-SR_{12} ; or stand for -$S(O)_p$-C_1-C_4alkyl optionally substituted by halogen; or stand for -NR_2-SO_2-NR_8R_9 ; or stand for nitro , for cyano or for –CS-NH_2;

R_{10} stands for hydrogen; or stands for -X-aryl which is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, -CN, -NO_2 , -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14}; or stands for a X-linked 5-membered aromatic or non-aromatic heterocyclic ring comprising nitrogen, oxygen or sulfur as ring members and being optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2 , -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14} ; or stands for a X-linked 6-membered aromatic or non-aromatic heterocyclic ring comprising nitrogen, oxygen or sulfur as ring members and being optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2 , -$NR_{12}R_{13}$, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14} ; or stands for -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14} ; or stands for -O-CO-R_{14} ; or stands for –C(=N-O-R_{12})-R_{14} ;

R_{10} and one R'_9 together form a 3- or 4-membered non-aromatic bridge forming an annellated ring which may contain a carbonyl function or nitrogen, oxygen or sulfur as ring members and is optionally substituted by C_1-C_3alkyl;

R_{11} is hydrogen, halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -$NR_{12}R_{13}$, -NO_2, -CN, -CO-R_{14} or the acyclic or cyclic ketals and acetals of -CO-R_{14} ;

W designates a bridge selected from –O-, -$S(O)_m$- or -NR_3- ;

X designates a direct bond or a bridge selected from –O-, -S(O)$_m$- or -NR$_3$- ;

a stands for a number 1, 2 or 3;

b stands for a number 1, 2 or 3;

c stands for a number zero, 1 or 2;

m stands for a number zero, 1 or 2;

n stands for a number 1 or 2;

p stands for a number 0, 1 or 2;

R_{12} and R_{13} independently of each other stand for hydrogen; C_1–C_5alkyl optionally substituted by halogen, C_1-C_4haloalkyl, C_1–C_4alkoxy, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino, or aryl which in turn is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy or -CN ; or stand for C_3–C_5alkenyl optionally substituted by halogen, C_1-C_4haloalkyl, C_1–C_4alkoxy, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino, or aryl which in turn is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy or -CN; or stand for C_3–C_5alkynyl optionally substituted by halogen, C_1-C_4haloalkyl, C_1–C_4alkoxy, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino, or aryl which in turn is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy or -CN; or together form a 5-ring-membered non-aromatic carbocyclic ring; or together form a 6-ring-membered non-aromatic carbocyclic ring which is interrupted by –O- or -N(C_1-C_4alkyl)- ;

R_{14} stands for C_1-C_5alkyl optionally substituted by halogen, C_1–C_4alkoxy, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino; aryl which in turn is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1–C_4alkoxy, -CN, -NO_2, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino or C_1-C_4alkylcarbonyl, C_1-C_4alkoxycarbonyl, C_1-C_4alkylaminocarbonyl or di(C_1-C_4alkyl)aminocarbonyl; or by a 5- or 6-ring hetero-aromatic ring which in turn is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl C_1–C_4alkoxy, -CN, -NO_2, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino, C_1-C_4alkylcarbonyl, C_1-C_4alkoxycarbonyl, C_1-C_4alkylaminocarbonyl or di-(C_1-C_4alkyl)aminocarbonyl; or stands for C_3-C_6cycloalkyl optionally substituted by halogen, hydroxy, =O, C_1–C_4alkoxy or C_1-C_4alkylamino, di(C_1-C_4alkyl)amino; or stands for C_1–C_4alkoxy optionally substituted by halogen, C_1–C_4alkoxy; C_1-C_4alkylamino, di(C_1-C_4alkyl)amino; or stands for phenyl which is optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, -CN, -NO_2, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino, C_1-C_4alkylcarbonyl, C_1-C_4alkoxycarbonyl, C_1-C_4alkylaminocarbonyl or di-(C_1-C_4alkyl)aminocarbonyl; or stands for a 5- or 6-ring membered heteroaryl comprising nitrogen, oxygen or sulfur as ring members and being optionally substituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl; C_1-C_4alkoxy, -CN, -NO_2, C_1-C_4alkylamino, di(C_1-C_4alkyl)amino, C_1-C_4alkylcarbonyl,

C_1-C_4alkoxycarbonyl, C_1-C_4alkylaminocarbonyl or di-(C_1-C_4alkyl)aminocarbonyl.

3. A compound according to claims 1 or 2 wherein
wherein Ar_1 and Ar_2 independently of each other stand for optionally substituted phenyl; and the optional substituents R_9 of Ar_1 are preferably selected from the group comprising halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_3-C_6cycloalkyl, -CN and -CO-R_{14}; and the optional substituents R'$_9$ of Ar_2 are preferably selected from the group comprising halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_3-C_6cycloalkyl, -CN, -CO-R_{14} , -$NR_{12}R_{13}$, -NR_2-CO-R_{12}, -NR_3-CO-OR_{12} , -NR_2-CO-NR_8R_9 , -NR_2-CO-SR_{12} , -NR_2-CS-OR_{12} , -NR_2-CS-NR_8R_9 , -NR_2-CS-SR_{12} , -$S(O)_p$-C_1-C_4alkyl , -$S(O)_p$-C_1-C_4haloalkyl , -NR_2-SO_2-NR_8R_9 , nitro , cyano and -CS-NH_2; and the optional substituent R_{10} on Ar_2 is selected from optionally substituted phenyl, optionally substituted imidazolyl, optionally substituted thiazolyloxy, optionally substituted pyridyloxy, optionally substituted pyridyl, optionally substituted pyrimidinyloxy, optionally substituted pyrimidinyl, optionally substituted oxadiazolyl, optionally substituted triazolyl, optionally substituted pyrazolyl, optionally substituted oxadiazolyloxy, optionally substituted triazolyloxy and optionally substituted pyrazolyloxy.

4. A compound of formula I according to claim 1 wherein
Ar_1 and Ar_2 independently stand for optionally substituted aryl groups; and
the optional substituents R_9 of Ar_1 are preferably selected from the group comprising halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_3-C_6cycloalkyl, -CN and -CO-R_{14}; and
the optional substituents R'$_9$ of Ar_2 are preferably selected from the group comprising halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_3-C_6cycloalkyl, -CN, -CO-R_{14} , -$NR_{12}R_{13}$, -NR_2-CO-R_{12}, –NR_3-CO-OR_{12} , -NR_2-CO-NR_8R_9 , -NR_2-CO-SR_{12} , -NR_2-CS-OR_{12} , -NR_2-CS-NR_8R_9 , -NR_2-CS-SR_{12} , -$S(O)_p$-C_1-C_4alkyl , -$S(O)_p$-C_1-C_4haloalkyl , -NR_2-SO_2-NR_8R_9 , nitro , cyano and -CS-NH_2; and
the optional substituent R_{10} on Ar_2 is selected from halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, -CN, -NO_2 , -$NR_{12}R_{13}$, -CO-R_{14} and the acyclic or cyclic ketals and acetals of -CO-R_{14} ; -O–CO-R_{14} , optionally substituted phenyl, optionally substituted imidazolyl, optionally substituted thiazolyloxy, optionally substituted pyridyloxy, optionally substituted pyridyl, optionally substituted pyrimidinyloxy, optionally substituted pyrimidinyl, optionally substituted oxadiazolyl, optionally substituted triazolyl, optionally substituted pyrazolyl,

optionally substituted oxadiazolyloxy, optionally substituted triazolyloxy and optionally substituted pyrazolyloxy; and

R_1, R_2, R_5, R_6, R_7 and R_8 independently of each other are hydrogen or methyl; and

R_3 is hydrogen or C_1-C_4alkyl optionally substituted with C_1-C_4alkoxy, C_3-C_4alkenyloxy, or C_3-C_4alkynyloxy; and

R_4 is hydrogen or C_1-C_4alkyl optionally substituted with halogen, C_1-C_3alkoxy , C_1-C_3alkylamino or di-C_1-C_3alkylamino; and

W is –O- ; and

X is a direct bond; and

the suffixes (a) and (b) designate the number 1 ; and

the suffix (c) stands for the number zero.

5. A compound of formula I according to claim 1 wherein

Ar_1 and Ar_2 independently of each other stand for optionally substituted phenyl; and

the optional substituents R_9 and R'_9 of Ar_1 and Ar_2 are selected from the group comprising C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy and C_3-C_6cycloalkyl; and

the optional substituent R_{10} on Ar_2 is selected from –CO-C_1-C_4alkyl , –CO-C_1-C_4alkoxy, -O-CO-C_1-C_4alkyl, optionally substituted phenyl, optionally substituted phenoxy, optionally substituted imidazolyl, optionally substituted imidazolyloxy, optionally substituted thiazolyloxy, optionally substituted thiazolyl, optionally substituted thiadiazolyloxy, optionally substituted thiadiazolyl, optionally substituted pyridyloxy, optionally substituted pyridyl, optionally substituted pyrimidinyloxy, optionally substituted pyrimidinyl, optionally substituted oxadiazolyl, optionally substituted oxadiazolyloxy, optionally substituted triazolyl, optionally substituted pyrazolyl, optionally substituted triazolyloxy and optionally substituted pyrazolyloxy; and

R_1 and R_5 are independently C_1-C_4alkyl and R_2 and R_6 are hydrogen; and

R_3 is hydrogen, C_1-C_4alkyl or C_1-C_4alkoxy-C_1-C_4alkyl; and

R_4 is C_1-C_4alkyl or C_1-C_4haloalkyl; and

W is –O- ; and

X is a direct bond; and

the suffixes (a) and (b) designate the number 1 ; and

the suffix (c) stands for the number zero.

6. A compound of formula I according to claim 1 wherein ; or wherein

Ar_1 and Ar_2 independently of each other stand for optionally substituted phenyl; and
the optional substituents R_9 and R'_9 of Ar_1 and Ar_2 are selected from the group comprising bromo, chloro, fluoro, iodo, cyano, hydroxy, amino, nitro, methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, allyloxy, propargyloxy, benzyloxy, trifluoromethyl, trifluoromethoxy, 2-cyano-2-methyl-butyloxy, methylsulfonyl, methylsulfinyl, methylthio, cyclopentyl, cyclohexyl, aminocarbonylmethyl, methoximinoethyl, aminocarbonyl, butylcarbonylamino, tert-butylcarbonylamino, triazol-1-ylmethyl, 1,2,4-triazol-1-ylmethyl, N-morpholinocarbonylamino, aminocarbonyloxy-ethoxy, morpholinocarbonyloxyethoxy and cyanopyridyloxyethoxy; and
the optional substituent R_{10} on Ar_2 is selected from aminocarbonyl, dimethylaminocarbonyl, acetyl, propionyl, acetoxy, methoxycarbonyl, ethoxycarbonyl, benzoyl, methoximinoethyl, 1-imidazolyl, 5-(3-methyl-1,2,4-thiadiazolyloxy), 2-pyridyl, 2-pyridyloxy, 4-pyrimidinyl, 2-(3,5-dichloropyridyloxy), 2-(4,6-dichloropyridyloxy), 2-(4,6-dimethoxypyrimidinylthio), 2-oxadiazolyl, 2-(5-methyl-oxadazolyl), 2-(5-ethyl-oxadiazolyl), 1-triazolyl, 1-pyrazolyl, 1-(3,4-dimethylpyrazolyl), 4-(2-methylthiazolyl), 2-(1,3,4-oxydiazolyl), N-pyrrolidin-2-onyl, and 2-quinoxalinyl, and
R_1 and R_5 are independently C_1-C_4alkyl and R_2 and R_6 are hydrogen; and
R_3 is hydrogen, C_1-C_4alkyl or C_1-C_4alkoxy-C_1-C_4alkyl; and
R_4 is C_1-C_4alkyl or C_1-C_4haloalkyl; and
W is –O- ; and
X is a direct bond; and
the suffixes (a) and (b) designate the number 1 ; and
the suffix (c) stands for the number zero.

7. A compound according to claim 1, wherein
Ar_1 and Ar_2 independently of each other stand for optionally substituted phenyl; and
the optional substituents R_9 and R'_9 of Ar_1 and Ar_2 are selected from the group comprising bromo, chloro, fluoro, methyl, ethyl, methoxy, ethoxy, trifluoromethyl and trifluoromethoxy; and
the optional substituent R_{10} on Ar_2 is selected from aminocarbonyl, acetyl, methoxycarbonyl, ethoxycarbonyl, 1-imidazolyl, 5-(3-methyl-1,2,4-thiadiazolyloxy), 2-pyridyl, 2-pyridyloxy, 4-pyrimidinyl, 2-(3,5-dichloropyridyloxy), 2-(4,6-dimethoxypyrimidinylthio), 2-oxadiazolyl, 2-(5-methyl-oxadazolyl), 2-(5-ethyl-oxadiazolyl), 1-triazolyl, 1-pyrazolyl, 4-(2-methylthiazolyl), 2-(1,3,4-oxydiazolyl), and N-pyrrolidin-2-onyl, and

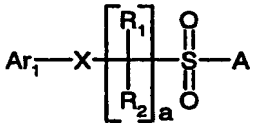
R_1 and R_5 are methyl and R_2 and R_6 are hydrogen; and
R_3 is hydrogen , methyl , ethyl, propyl, ethoxymethyl or methoxymethyl, and
R_4 is methyl , ethyl, propyl or fluoromethyl; and
W is –O- ; and
X is a direct bond; and
the suffixes (a) and (b) designate the number 1 ; and
the suffix (c) stands for the number zero.

8. A compound of formula I according to claim 1 selected from the group comprising
2-[(4-chlorophenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-chlorophenoxy)-methyl]-2-[(2-chlorophenyl)-methyl]-sulfonylamino-propionitrile,
2-[(4-chlorophenoxy)-methyl]-2-[(2-fluorophenyl)-methyl]-sulfonylamino-propionitrile,
2-[(4-trifluoromethoxyphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-chloro-3-methylphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-chlorophenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-chlorophenoxy)-methyl]-2-benzylsulfonylamino-3-methoxy-propionitrile,
2-[(4-acetylphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-methoxyphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-acetylphenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-cyanophenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
(-)-2-[(4-cyanophenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-propionylphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-ethoxyphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-[1,2,4]triazol-1-yl-phenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-imidazol-1-yl-phenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-cyanophenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-[1,3,4]oxadiazol-4-yl-phenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-methoxyphenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-ethoxyphenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
(-)2-[(4-ethoxyphenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-[1,2,4]triazol-1-yl-phenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-methoxycarbonylphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
2-[(4-propionylphenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-chlorophenoxy)-methyl]-2-benzylsulfonylamino-3-fluoro-propionitrile,

2-{[4-(2-methyl-thiazol-4-yl)-phenoxy]-methyl)-2-benzylsulfonylamino-butyronitrile,
2-[(4-pyrazol-1-yl-phenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-(5-oxo-5,6,7,8-tetrahydronaphth-2-yloxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-chloro-phenoxy)-methyl]-2-benzylsulfonylamino-3-methyl-butyronitrile,
2-[(4-iso-propyl-phenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-nitro-phenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(4-cyano-phenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile,
2-[(3-fluoro-4-propionyl-phenoxy)-methyl]-2-benzylsulfonylamino-propionitrile,
(-) -2-[(4-[1,2,4]triazol-1-yl-phenoxy)-methyl]-2-benzylsulfonylamino-butyronitrile, and
(-)-2-[(4-acetylphenoxy)-methyl]-2-benzylsulfonylamino-propionitrile.

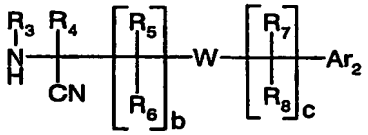
9. A process for the preparation of a compound of formula I according to claim 1, which comprises reacting

a) reacting the the sulfonylating agent of formula II



(II)

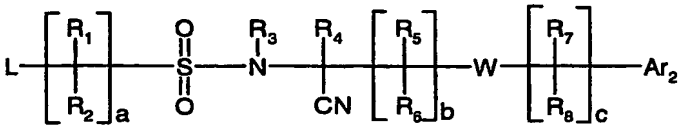
wherein wherein Ar_1, a, X and R_1 to R_2 , are defined as under formula I, and A stands for a leaving group like an anhydride, i.e. $-O-SO_2-(CR_1R_2)_a-X-Ar_1$ or $-O-CO-C_1-C_4$alkyl, but preferably for halogen, especially bromine or more preferably chlorine, with an amino-acetonitrile of formula III



(III)

wherein Ar_2, b, c, W and R_3 to R_8 , are defined as under formula I, or

b) coupling the reacting the compound of formula XIII



(XIII)

wheren Ar_1, Ar_2, a, b, c, W and R_1 to R_8 are defined as under formula I and L is a leaving group such as e.g. halogen, preferably chlorine, bromine or iodine or a sulfonyloxy group such as e.g. methylsulfonyloxy-, toluylsulfonyloxy- or trifluoromethylsulfonyloxy- group, is

coupled with a compound of formula XIV

$$Ar_1—X' \qquad (XIV)$$

wherein Ar_1 is defined as under formula I and X' is either an anionic radical species of X such as O^-, S^-, $S(O)_m^-$ combined with an alkaline- or earthalkaline– metal cation as counterion or is defined as X-H such as OH, SH, NHR_3 if at the same time the reaction is generally carried out in the presence of a base such as alkaline-, earthalkaline-carbonates or hydrogencarbonates such e.g. sodium or potassium-carbonate, sodium or potassium – hydrogen-carbonate, cesium-carbonate or an agent capable of scavenging the formed acid.

10. A composition for controlling and protecting against phytopathogenic microorganisms, comprising a compound of formula I according to claim 1 as active ingredient together with a suitable carrier.

11. The use of a compound of formula I according to claim 1 in protecting plants against infestation by phytopathogenic microorganisms.

12.. A method of controlling and preventing an infestation of crop plants by phytopathogenic microorganisms, which comprises the application of a compound of formula I according to claim 1 as active ingredient to the plant, to parts of plants or to the locus thereof.

13. A method according to claim 12, wherein the phytopathogenic microorganisms are fungal organisms.